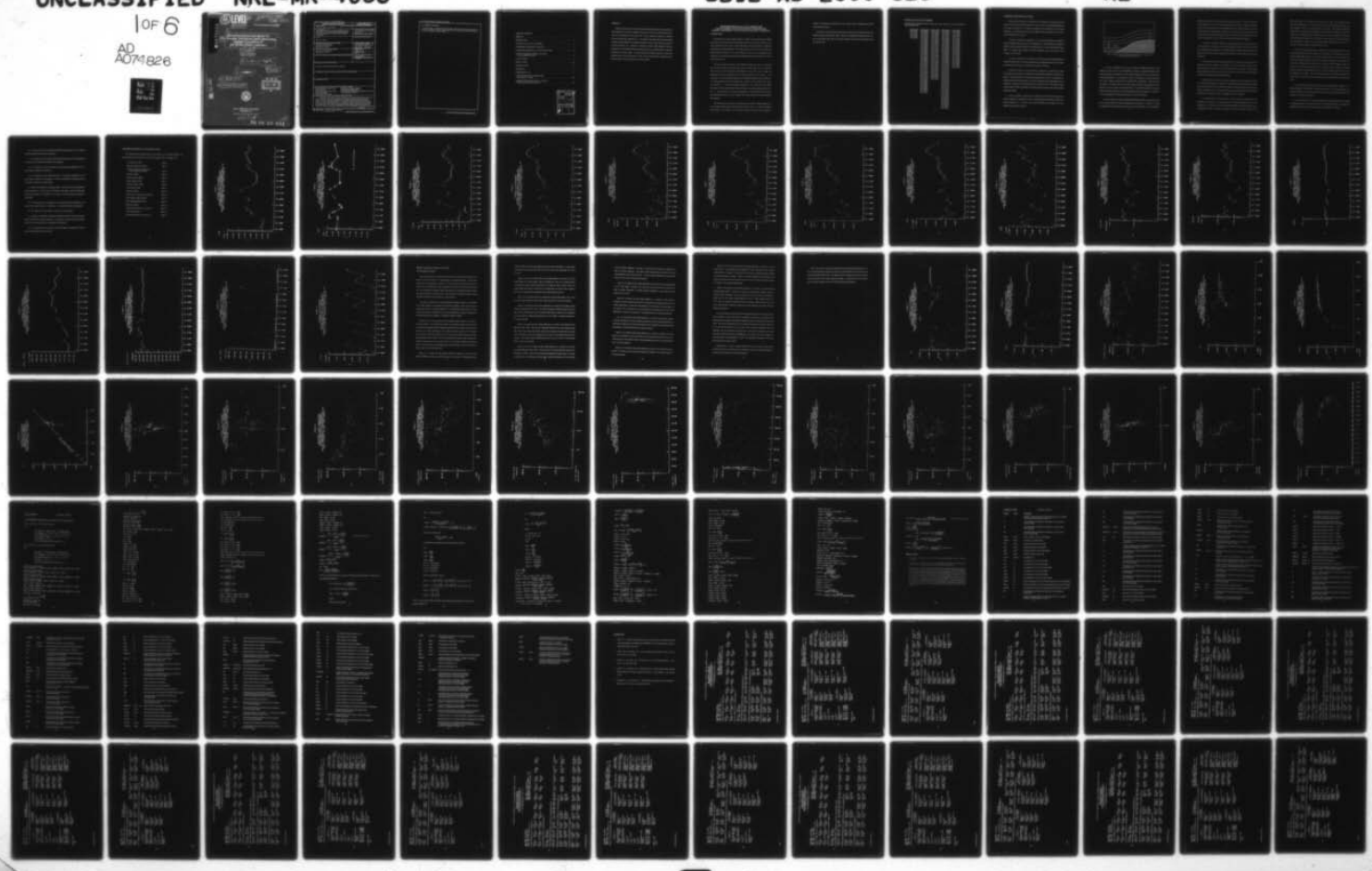
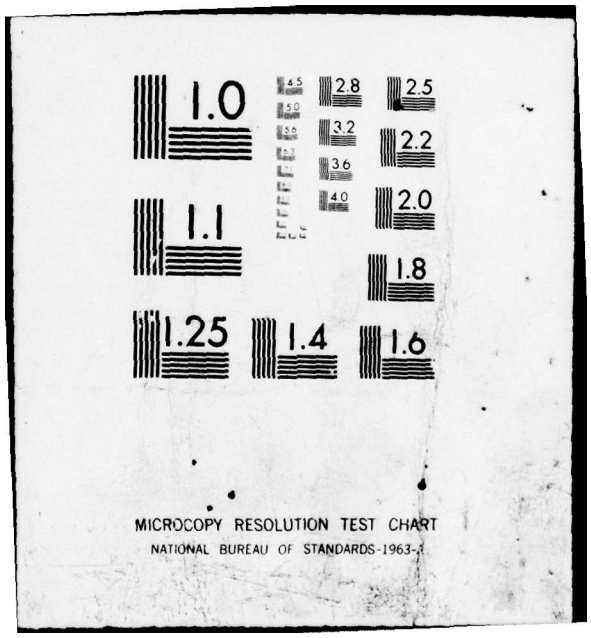
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NRL Memorandum Report 4056

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Micrometeorological Data Report for The November 1978 Electro-Optics Meteorology (EOMET) Experiment at San Nicolas Island, California

(10) THEODORE V. BLANC

Atmospheric Physics Branch
Ocean Sciences Division

(9) Interim rept.

(11) 20 Aug 1979

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Electro-Optics Meteorology
Atmospheric Infrared Transmission
Wind Profile Escarpment Effect
Instrumentation Difficulties in the Marine Environment
San Nicolas Island, California

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Presented in this report are both the profile and bulk aerodynamic derived micrometeorological data taken in the marine atmospheric surface layer at San Nicolas Island, California, during a five day experiment in November 1978. Thirty-six figures are presented to represent much of the data results in graphic form. A comparison of the profile and bulk derived stability parameters strongly indicated an escarpment phenomenon similar to what had been reported for the Risø Denmark, site. Although an escarpment induced, height dependent horizontal acceleration of the wind field profile was observed, there was no apparent effect on either the temperature

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20. ABSTRACT (Continued)

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ABSTRACT

Presented in this report are both the profile and bulk aerodynamic derived micrometeorological data taken in the marine atmospheric surface layer at San Nicolas Island, California, during a five day experiment in November 1978. Thirty-six figures are presented to represent much of the data results in graphic form. A comparison of the profile and bulk derived stability parameters strongly indicated an escarpment phenomenon similar to what had been reported for the Risø, Denmark, site. Although an escarpment induced, height dependent horizontal acceleration of the wind field profile was observed, there was no apparent affect on either the temperature or humidity profile. A suitable wind field escarpment correction for future data taking was left to the next experiment, in which a better quality bulk water temperature measurement essential to the bulk comparison would be available.

MICROMETEOROLOGICAL DATA REPORT FOR THE NOVEMBER 1978 ELECTRO-OPTICS METEOROLOGY (EOMET) EXPERIMENT AT SAN NICOLAS ISLAND, CALIFORNIA

INTRODUCTION

The purpose of the Naval Research Laboratory's (NRL) San Nicolas Island meteorological experiments is to provide the micrometeorological measurements necessary to characterize the marine atmospheric surface layer in which simultaneous infrared atmospheric transmission measurements are being performed. The original impetus for this work was provided by the Optical Signatures Program of the Naval Weapons Center and has subsequently been transferred to the auspices of the Electro-Optics Meteorology Program (EOMET) of the Naval Ocean Systems Center.

This report contains the results of one hundred and thirty-nine data runs constituting sixty-nine and a half hours of data taken over a five day period between 13 and 17, November, 1978. Since the previous experiment (CEWCOM-78) of May, 1978, several changes and modifications have been incorporated into the present experiment. They include: 1. The introduction of a bulk aerodynamic technique for estimating the stability and flux parameters. 2. The presentation of many of the parameters as a function of time in graphic form to facilitate utilization. 3. The detailed graphic presentation of the profile and bulk stability discrepancy in order to determine and evaluate the degree of an island escarpment effect on the data. 4. The presentation of the parameter calculations in a simple algebraic form utilizing a short hand english notation as well as a listing of the computer program in the Hewlett-Packard HPL language.

The experiment data contained in the present report is available on digital magnetic flexible disk (Hewlett-Packard HPL language formatted) upon request to the NRL Atmospheric Physics Branch. The complete text of the report (including experiment data and figures) is

available on microfiche and information on how to obtain copies is available from the NRL Library Documents Section.

In addition to the data contained in this report, there are two other NRL November 1978 EOMET experiment memorandum reports. They cover the Radon 222 data taken by R.E. Larson for determining open ocean versus coastal conditions, and the aerosol distribution data taken by R.K. Jeck.

LISTING OF DATA BY RUN NUMBER

The Run Number signifies the data run start time: year, month, day, hour, and minutes, in Pacific Standard Time.

13 Nov. 1978	14 Nov. 1978	15 Nov. 1978	16 Nov. 1978	17 Nov. 1978
7811132135	7811140000	7811150330	7811160000	7811170000
7811132200	7811140030	7811150400	7811160030	7811170030
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7811132330	7811140200	7811150530	7811160200	7811170200
	7811140230	7811150600	7811160230	7811170230
	7811140300	7811150630	7811160300	7811170300
	7811140330	7811150700	7811160330	7811170330
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	7811140730	7811151630	7811160805	7811170730
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	7811141000	7811151800	7811160930	7811170900
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EXPERIMENT PROCEDURE AND NOTES

The basic system description and rationale for this experiment are contained in the data report[1] of the previous May 1978 experiment. Since that time, the following modifications to the system and additions to the calculation procedures were incorporated into the present experiment. For a detailed presentation of the updated calculation procedures, see the CALCULATIONS section of this report.

1. In order to facilitate the comparison of the micrometeorological and atmospheric infrared transmission data, each data run was identified by a mutually employed ten digit Run Number which represented the data run start date and time in terms of Pacific Standard Time (PST). For example: Run Number 7811131430 represents a data run started at 1978, November, 13th, 14:30 PST.

2. In order to facilitate the synchronization of the simultaneous micrometeorological and infrared transmission data, the micrometeorological data averaging period was set for a duration of 30 minutes with each data run initiated at the clock hour or half hour.

3. Following the practice of other experiments[2] conducted on a similar beach or island type escarpment, this experiment represented the measurement height above the escarpment, Figure 1, as being equivalent to the measurement height above the ocean. For simplicity, the indicated profile measurement heights (Z1 and Z2) were defined as the average height of the air temperature, wind speed, and dew point sensors at the respective levels. The turbulence measurement heights (ZTUR1 and ZTUR2) were located 0.60 meters above the respective profile measurement heights.

4. In order to enable a comparison in this experiment of the profile and the bulk aerodynamic techniques for computing the various micrometeorological parameters, the bulk aerodynamic equations of C. A. Friehe[3,4] (with minor modifications) were added to the post-experiment data reduction procedure.

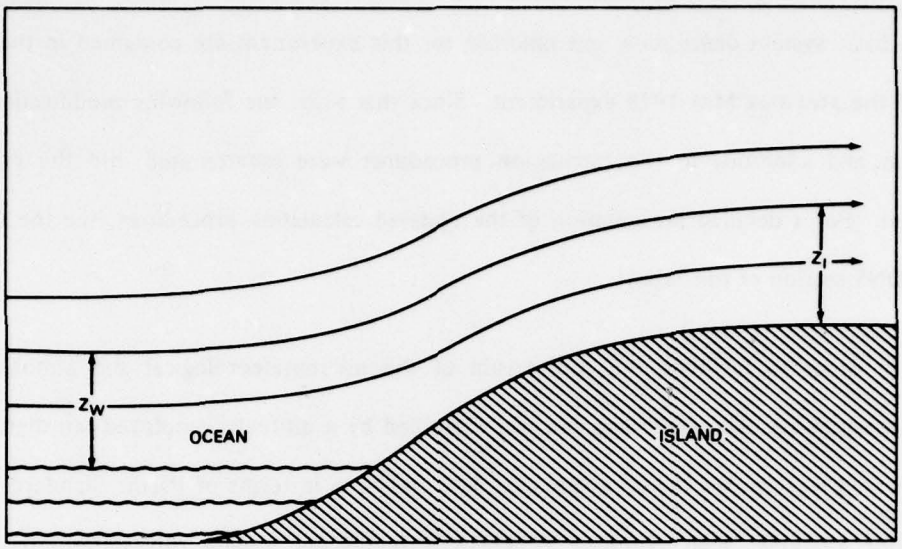


Figure 1. The measurement height above the island escarpment (Z_I) is equivalent to the measurement height above the ocean (Z_w).

5. In order to compensate the dew point electronics (excluding the sensor) for time dependent variations and the non-interchangability of the device's component subsystems, high precision resistance type secondary dew point standards (calibrated at the time of each sensor's primary NBS calibration) were employed in the field. This procedure was typically performed twice a day to yield field calibration corrections (DP1FCAL and DP2FCAL). These corrections were added to the respective dew point raw data voltage value before employing the curve fit equations to convert the data into engineering units. It was found that when the dew point electronics functioned properly, the electronics typically drifted an equivalent of $\sim$0.02°C (or $\sim$1/3 the magnitude of the measurement accuracy) over a one week period.

6. While conducting the above described field calibration procedure, it was observed that the top level dew point device (DP1) experienced drifts equivalent to $\sim$0.20°C (or $\sim$3 times the magnitude of the measurement accuracy) over only a 6 hour period. In a later checkout of

the dew point electronics, it was found that the erratic drift was due to a failure of the device's sensor control circuit. As part of the post-experiment data reduction, an attempt was made to correct the data by assuming that the nonsystematic drift of the system was linear as a function of time between the field calibrations. However, as can be seen from the corrected data contained in this report, the specific humidity values of the upper level often exceeded those of the lower level, leaving the accuracy of the top level dew point readings still in question.

7. In order to minimize the affect of the questionable accuracy of the upper level dew point measurement in computing the profile derived stability parameters (and thus the profile flux and profile scaling parameters), the profile Richardson's number stability parameter was defined in terms of the potential temperature partial derivative and the ambient virtual potential temperature.

8. The bulk aerodynamic calculations employed for this experiment were based upon the parameter values at the standard 10 meter height. The various parameter values for the 10 meter height were estimated from the profile measurements by assuming an ideal log-linear profile relationship and taking into account the fact that each type of sensor system was slightly offset from the indicated profile measurement height.

9. Unfortunately, the bulk water temperature measurement for this experiment still relied on the "bucket and thermometer" technique. In the post-experiment data reduction procedure, the raw data voltage value for the bulk water temperature was manually altered by assuming a linearly interpolated value for the data runs which were conducted between the actual bucket measurements. See figure 3 on page 12 and ERRATA NOTE 1 on page 60.

10. The MRI model 1022 S anemometer cup failure experienced during the previous experiment was corrected by a special electron beam welding modification made by the manufacturer. It had been found that the solder which held the previous stainless steel cups to the anemometer turned to a powdery consistency in as little as three days exposure to the

marine environment. This caused the cups to rotate out of correct vertical alignment and/or fall off of the anemometer. The data contained in the previous experiment data report[1] had been screened to remove any data affected by this problem. The modified anemometers employed in this experiment were calibrated at the National Bureau of Standards in January and March 1979. To facilitate a greater measurement accuracy at low wind speeds, the calibrations and the representative polynomial curve fit equations were divided into two discrete segments: 0 to 5 m/sec and 5 to 20 m/sec. This reduced the combined (calibration and curve fit) error to less than $\pm 2\%$ of the reading for wind speeds above 2 m/sec.

11. The R. M. Young model 43404 air temperature solar radiation shield back flow problem, observed during the previous experiment, was corrected by the installation of the more powerful model 43404A aspirator onto the existing radiation shields. It had been observed that under high wind speed conditions, the mouth of the shield containing the air temperature sensor acted as a Bernoulli effect, or Prandtl tube, causing the air flow through the aspirator to reverse. Thus, air heated by the aspirator motor was drawn past the air temperature sensor and gave rise to spurious air temperature readings. The previous experiment report[1] did not contain data affected by this problem. The new aspirators employed in the present experiment also incorporated a "correct flow" indicator lamp powered by an internally mounted air flow detector switch.

12. The YSI-Sostman barometric pressure sensor had been damaged in shipment to the previous experiment. In preparation for the present experiment, it and the backup sensor subsequently employed in the previous experiment were both returned in September 1978 to the manufacture for repair and recalibration.

13. The polynomial curve fit equations (employed for converting the raw data voltages into engineering units) for wind speed, dew point, and barometric pressure, were updated and simplified by utilizing a library computer program on the NRL DEC-10 computer.

14. The correction of both the profile and bulk derived specific heat of air as a function of specific humidity was added to the calculations.

15. The correction of both the profile and bulk derived latent heat of water vaporization as a function of air temperature was added to the calculations.

16. The computation of both the profile and bulk derived drag coefficient for the 10 meter height was added to the calculations.

17. The computation of the profile derived Z/L (or ζ) stability parameter for the 10 meter height was added to the calculations to facilitate a comparison of the profile and bulk aerodynamic techniques at a standard height.

18. Because the profile derived roughness length is a function of the profile Richardson stability measurement, it is most valid at the geometric mean height. Thus, the profile roughness length computation was modified to be a function of the wind speed at the geometric mean height.

19. The computation of the buoyancy flux was eliminated and the computation of the total heat flux budget (latent heat + sensible heat − sky and solar radiation) was substituted.

20. The computation of vapor pressure in terms of torr was eliminated.

21. Although no microthermal turbulence temperature structure (C_t^2) data were subsequently taken during the present experiment, the capacity to compute the optical refractive index (C_n^2) from the turbulence data was added to the calculations.

22. The computation of the tide table value was modified to be expressed in terms of meters and referenced to the mean sea level.

PARAMETER GRAPHICS AS A FUNCTION OF TIME

The following meteorological parameters were computed for the standard height of 10 meters and plotted as a function of start time (Run Number) in PST. See pages 11-26.

Air temperature (ATB)	figure 2
Bulk water temperature (WTB)	figure 3
Potential air temperature minus bulk water temperature (PTWTB)	figure 4
Dew point (DPB)	figure 5
Relative humidity (RHB)	figure 6
Specific humidity (SHB)	figure 7
Absolute humidity (AHB)	figure 8
Vapor pressure (VPB)	figure 9
Wind speed (WSB)	figure 10
Bulk friction or scaling velocity (FRICVB)	figure 11
Bulk roughness length (RUFLB)	figure 12
Bulk drag coefficient (DRAGB)	figure 13
Barometric pressure	figure 14
Wind direction referenced to true North	figure 15
Sky and solar radiation	figure 16
Tide table referenced to mean sea level	figure 17

FIGURE 2

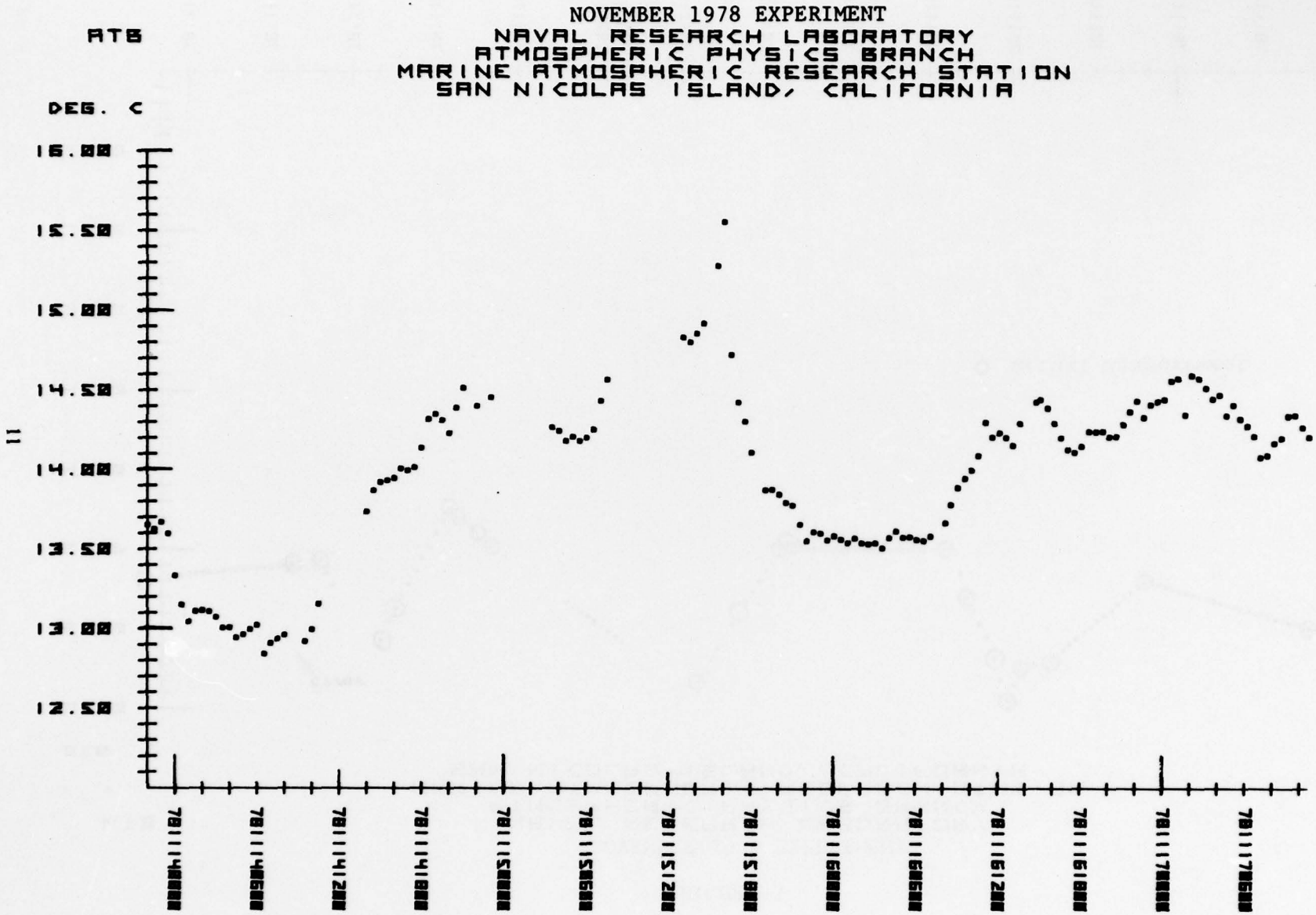

NOVEMBER 1978 EXPERIMENT
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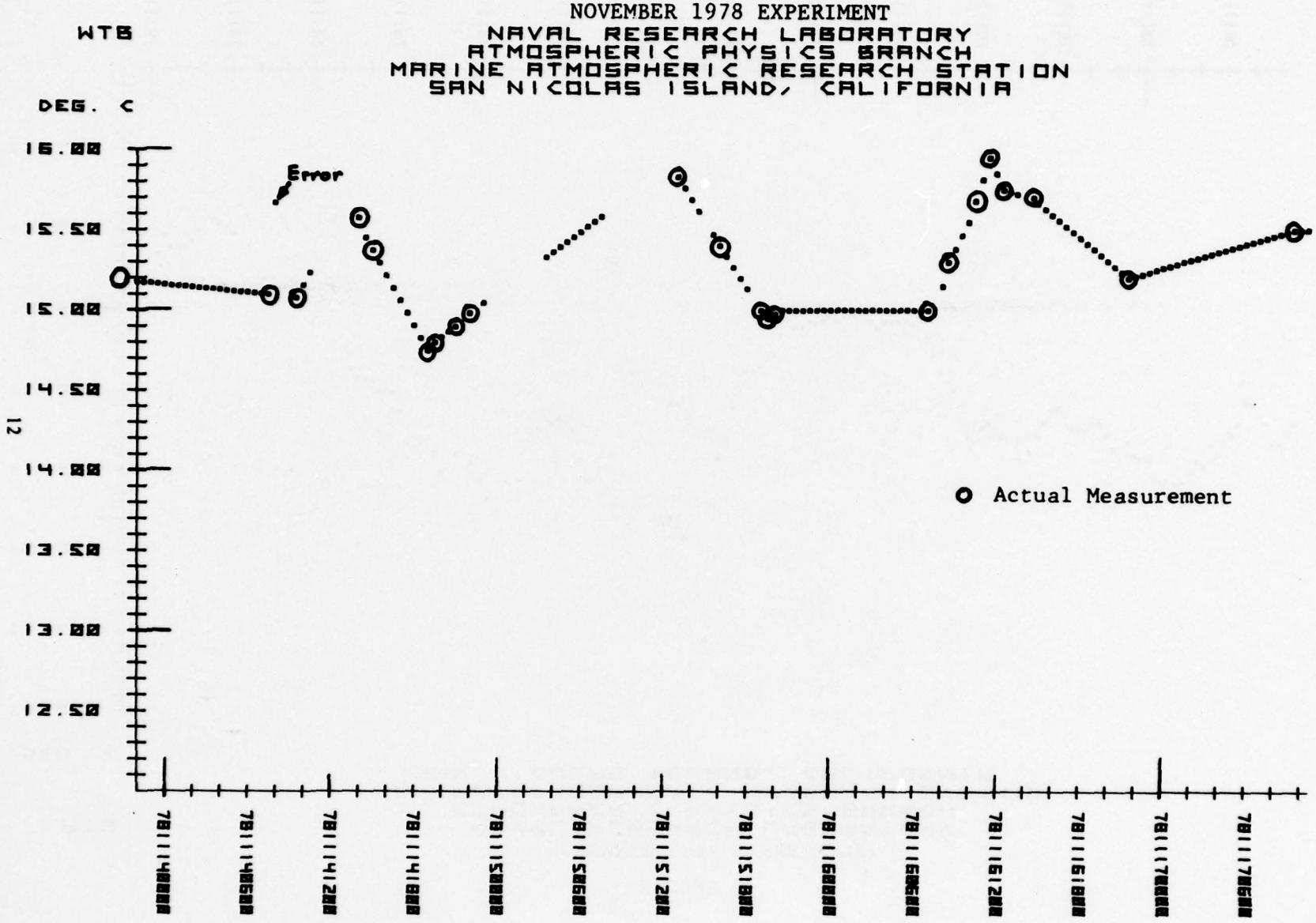

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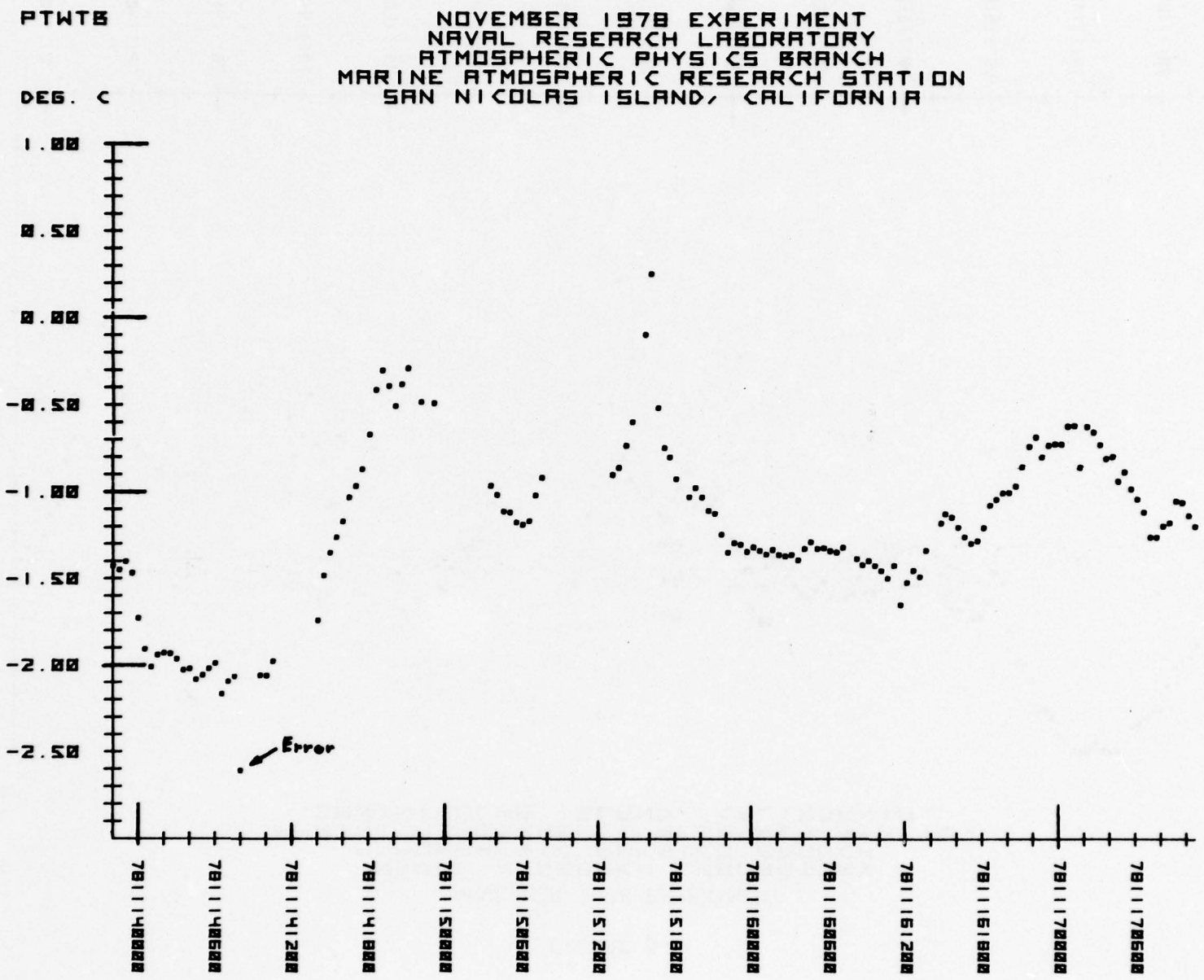

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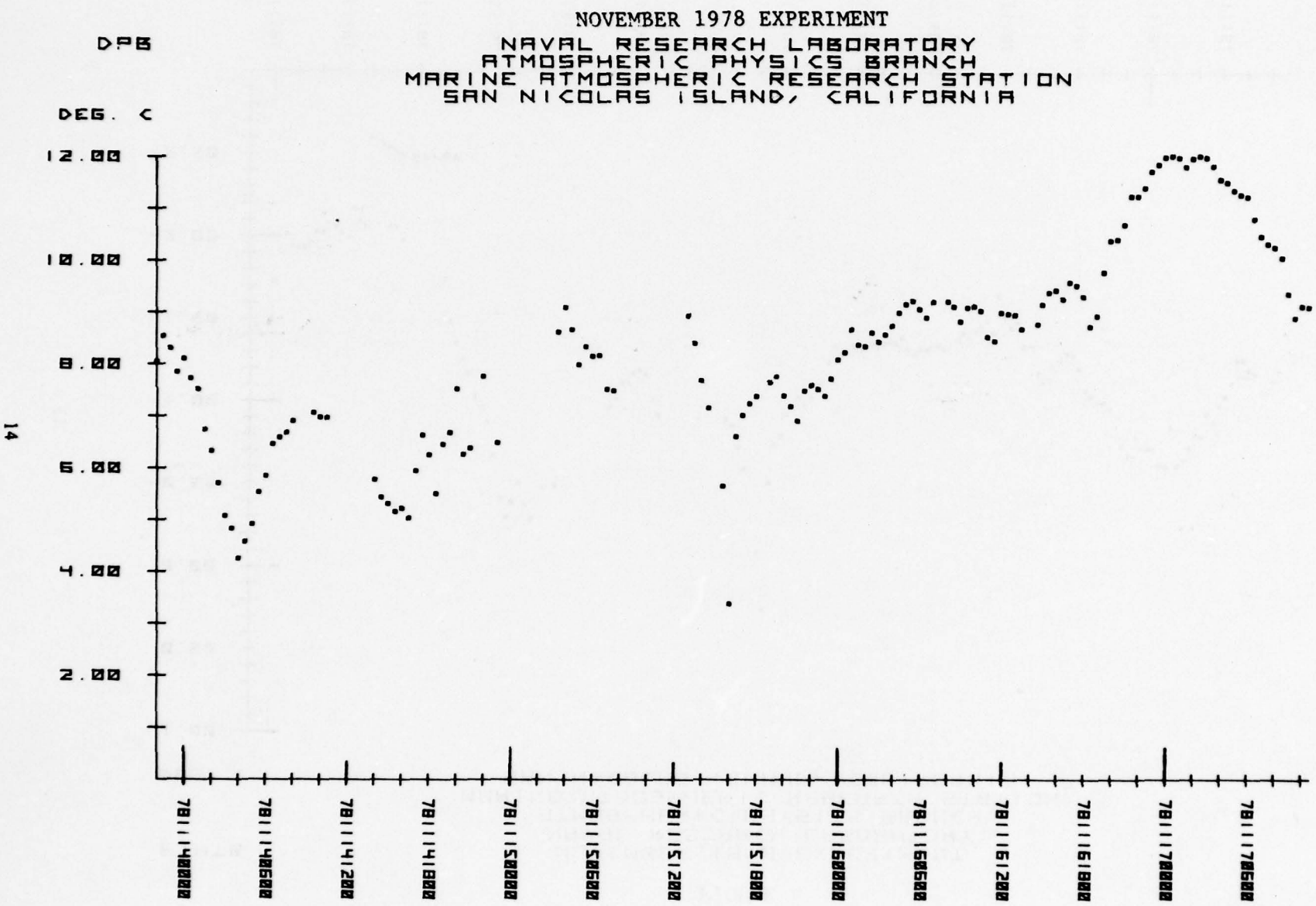

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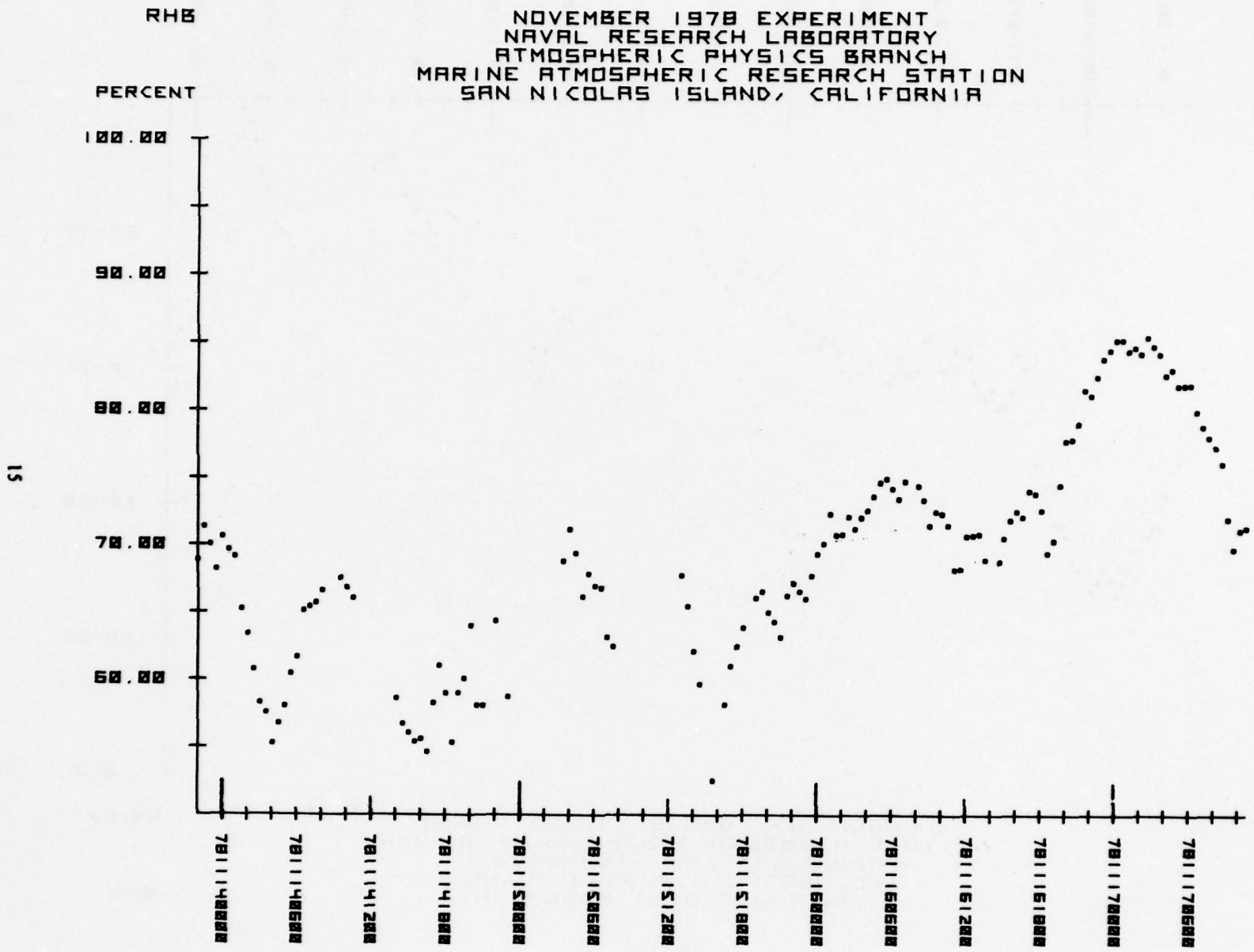

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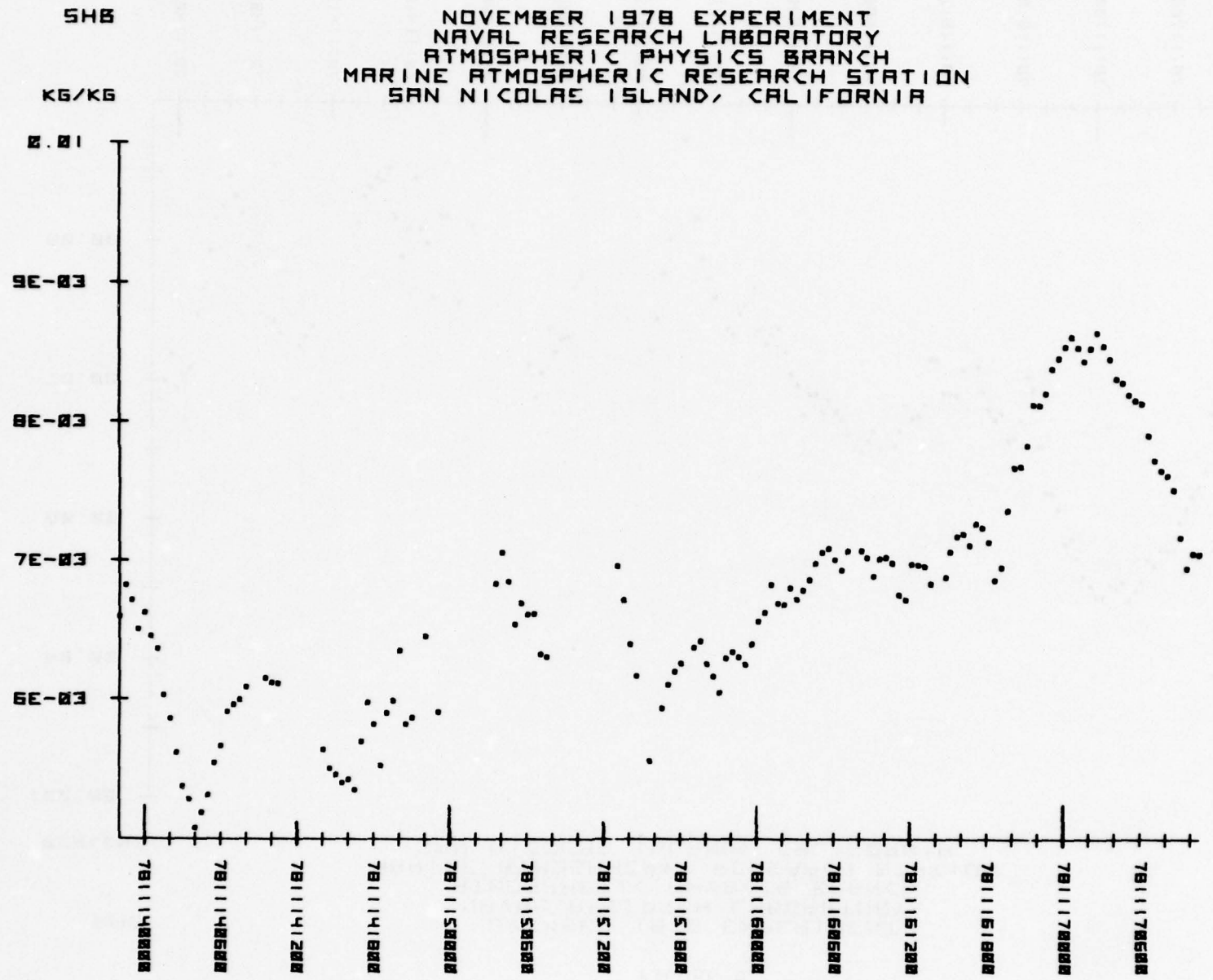

SHB
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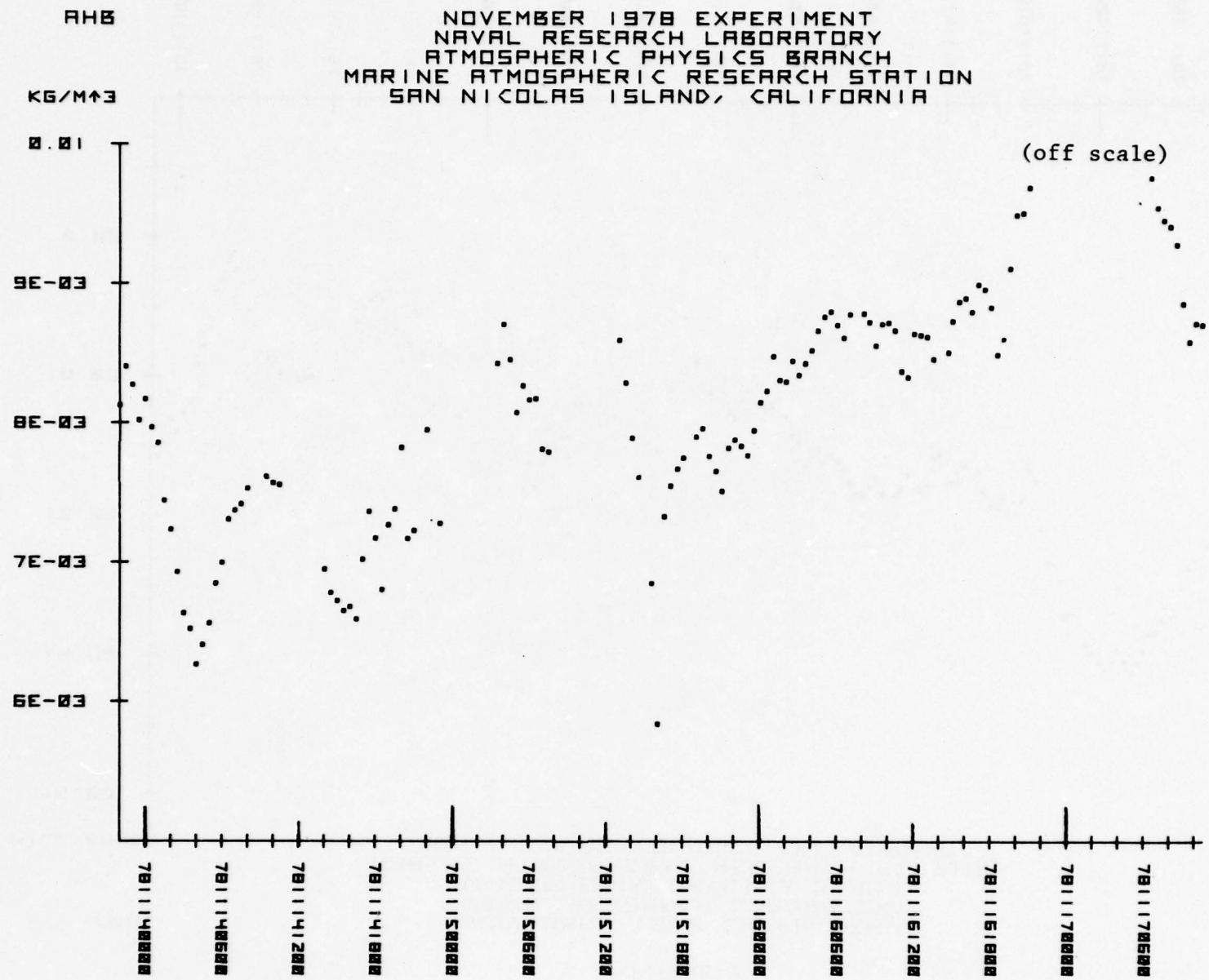

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FIGURE 9

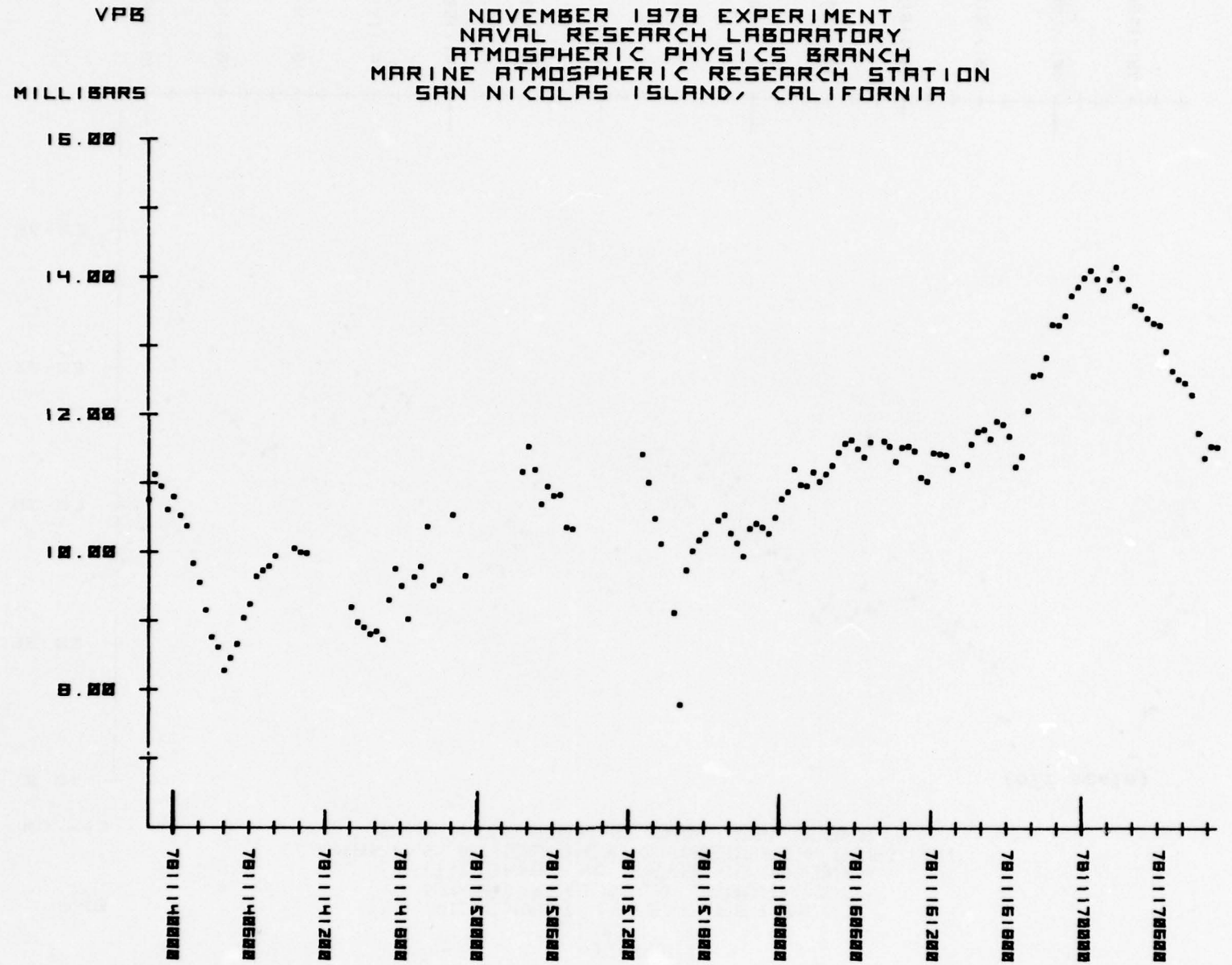

VPB
NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
MILLIBARS
16.00
14.00
12.00
10.00
8.00
781114000
781114060
781114120
781114180
781115000
781115060
781115120
781115180
781116000
781116060
781116120
781116180
781117000
781117060

FIGURE 10

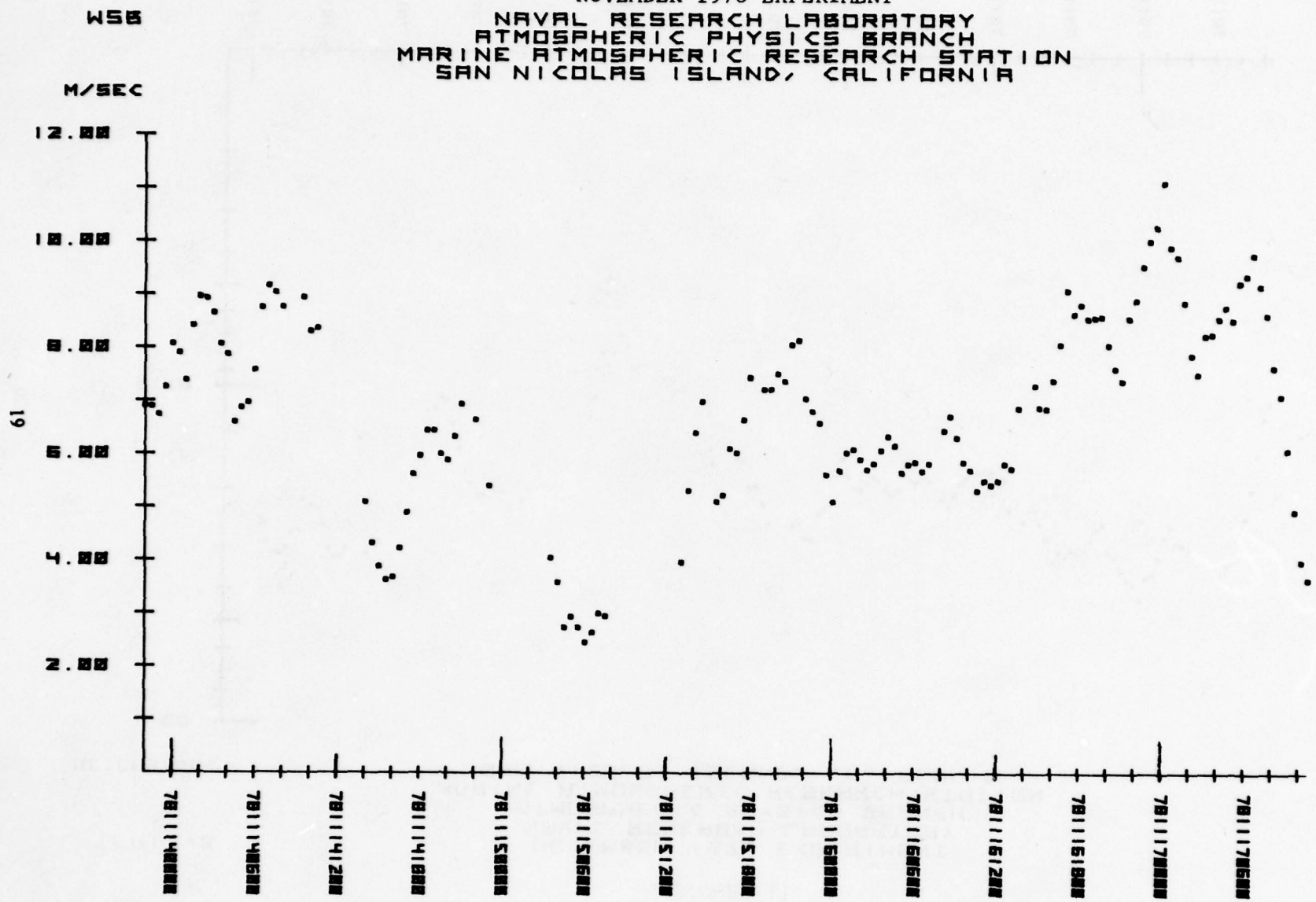
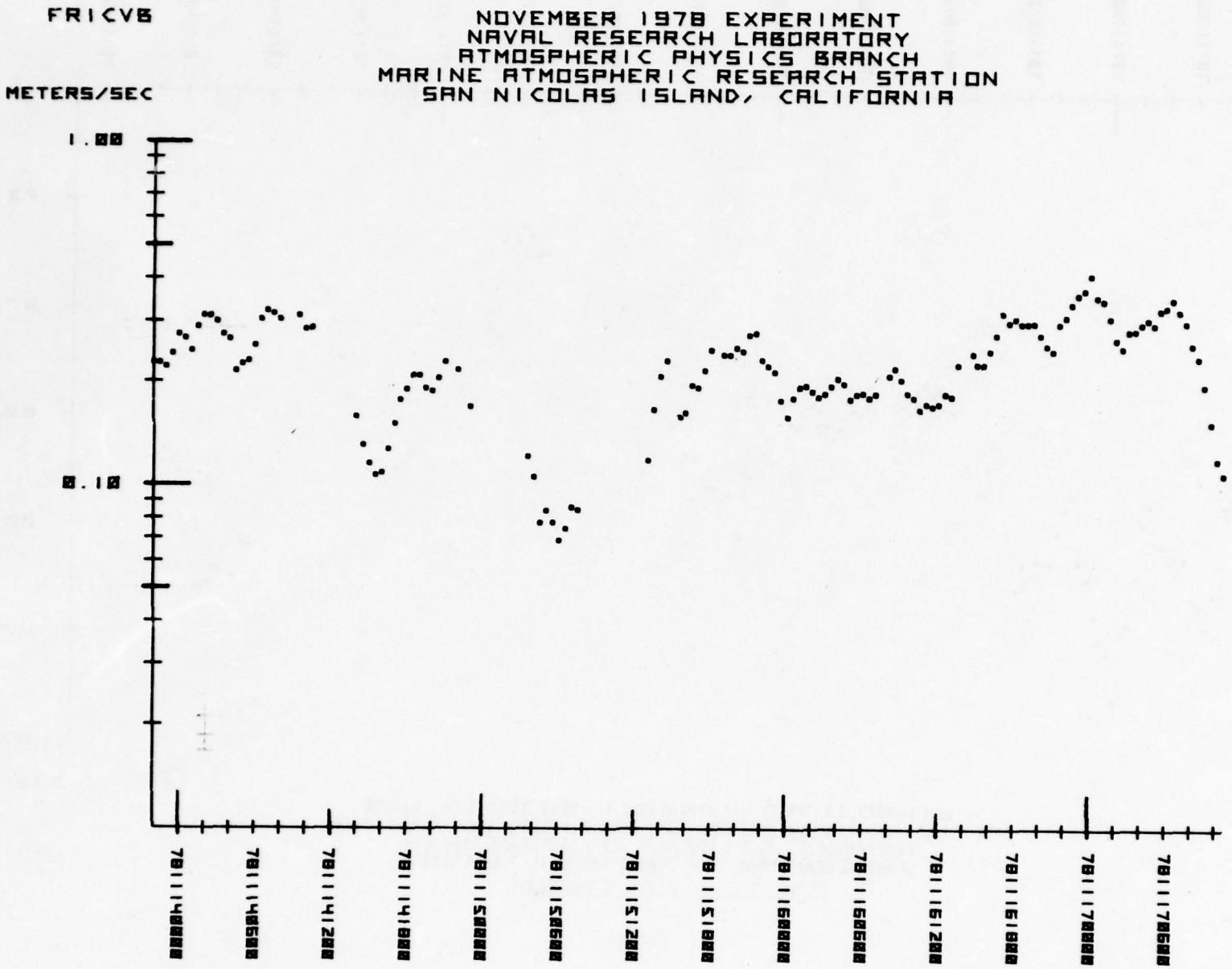

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
WSB
M/SEC
12.00
10.00
8.00
6.00
4.00
2.00
781114000000
781114060000
781114120000
781114180000
781115000000
781115060000
781115120000
781115180000
781116000000
781116060000
781116120000
781116180000
781117000000
781117060000

FIGURE 11


FRICVB
METERS/SEC
NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
1.00
0.10
781114000000
781114060000
781114120000
781114180000
781115000000
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781117000000
781117060000

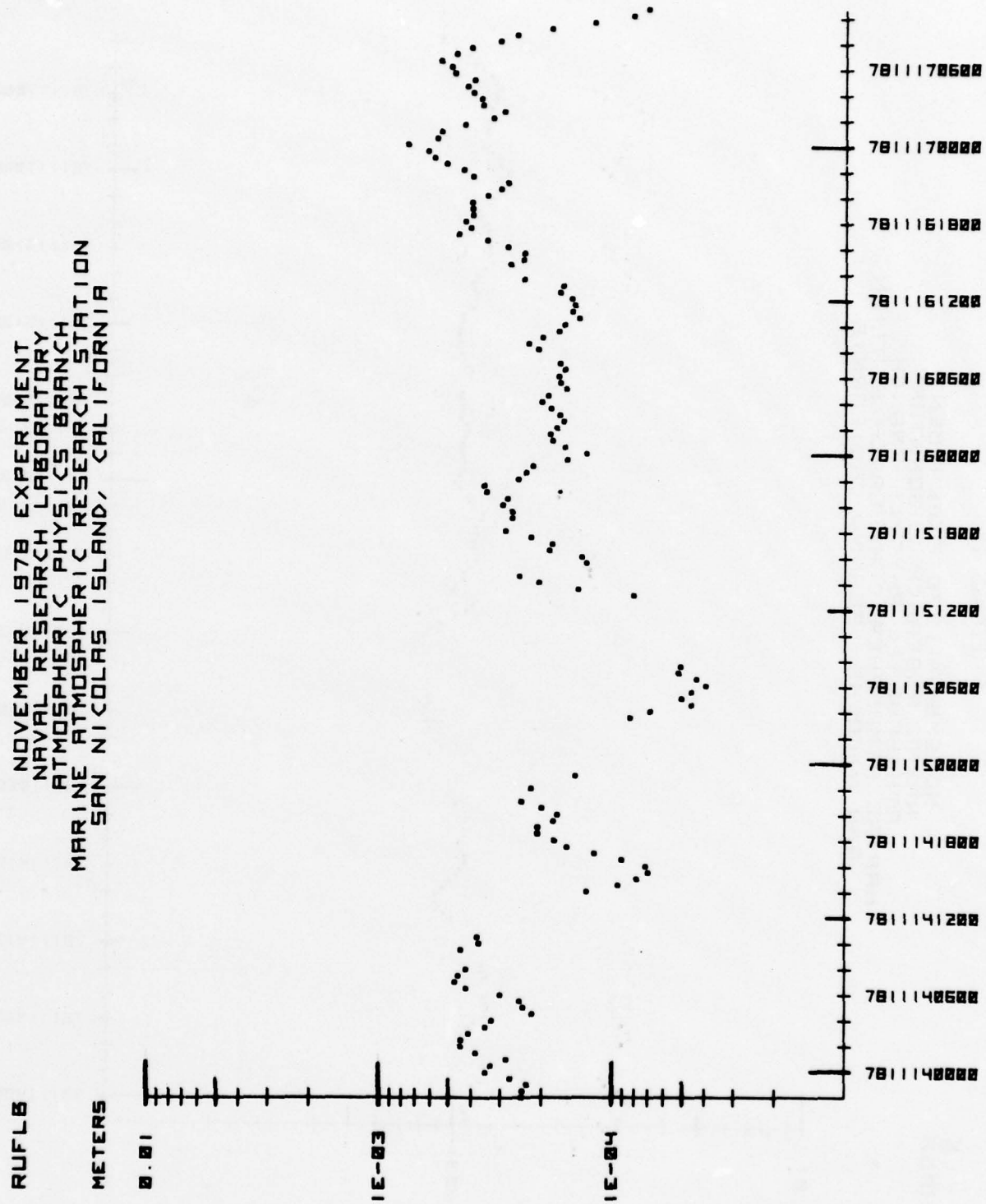

FIGURE 12
NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RUFLB
METERS
0.01
1E-03
1E-04
781117060O
781117000O
781116180O
781116120O
781116060O
781116000O
781115180O
781115120O
781115060O
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781114180O
781114120O
781114060O
781114000O

FIGURE 13

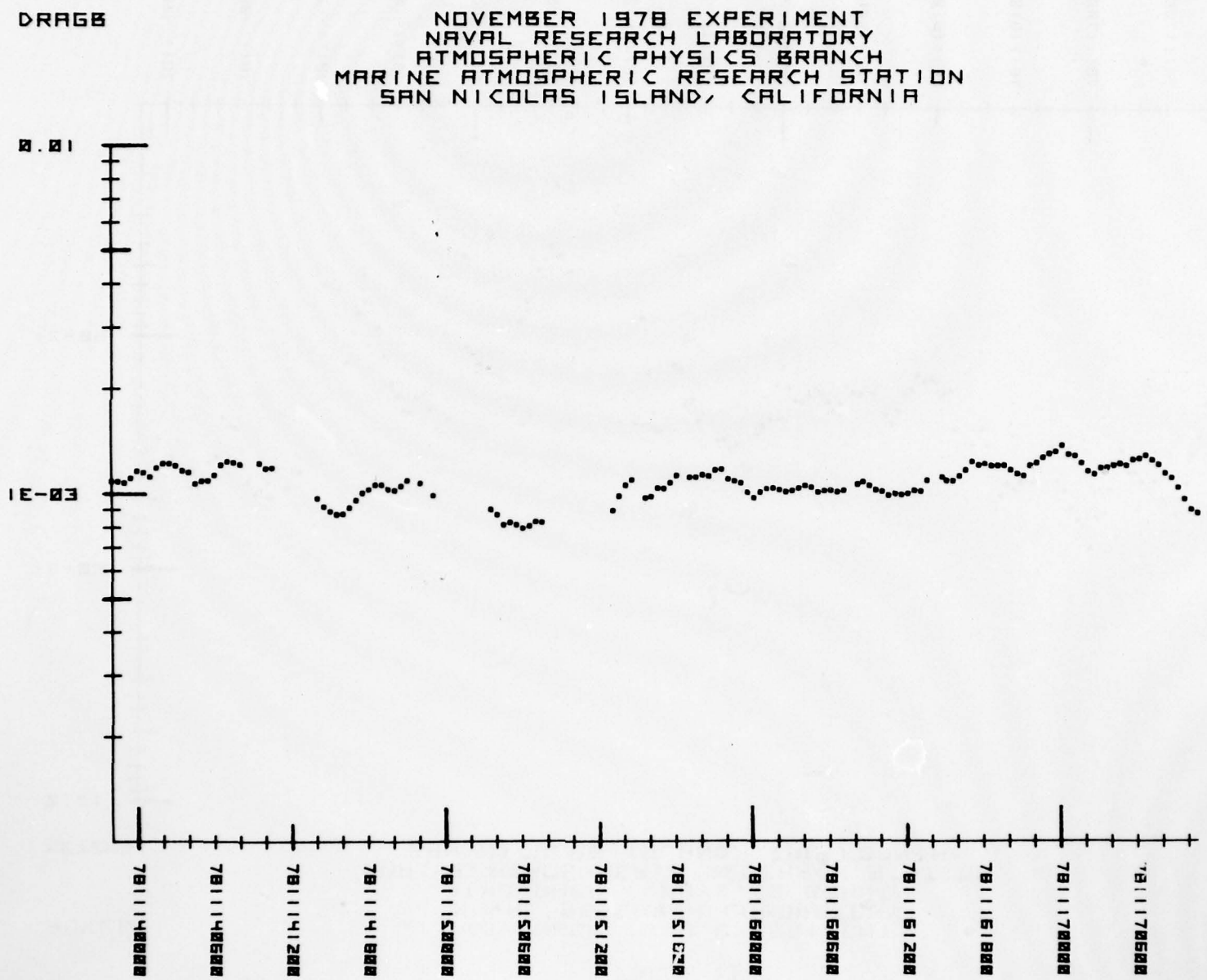

DRAGB
NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
0.01
1E-03
78111400000
78111404800
78111412000
78111419200
78111500000
78111504800
78111512000
78111519200
78111600000
78111604800
78111612000
78111619200
78111700000
78111704800

FIGURE 14

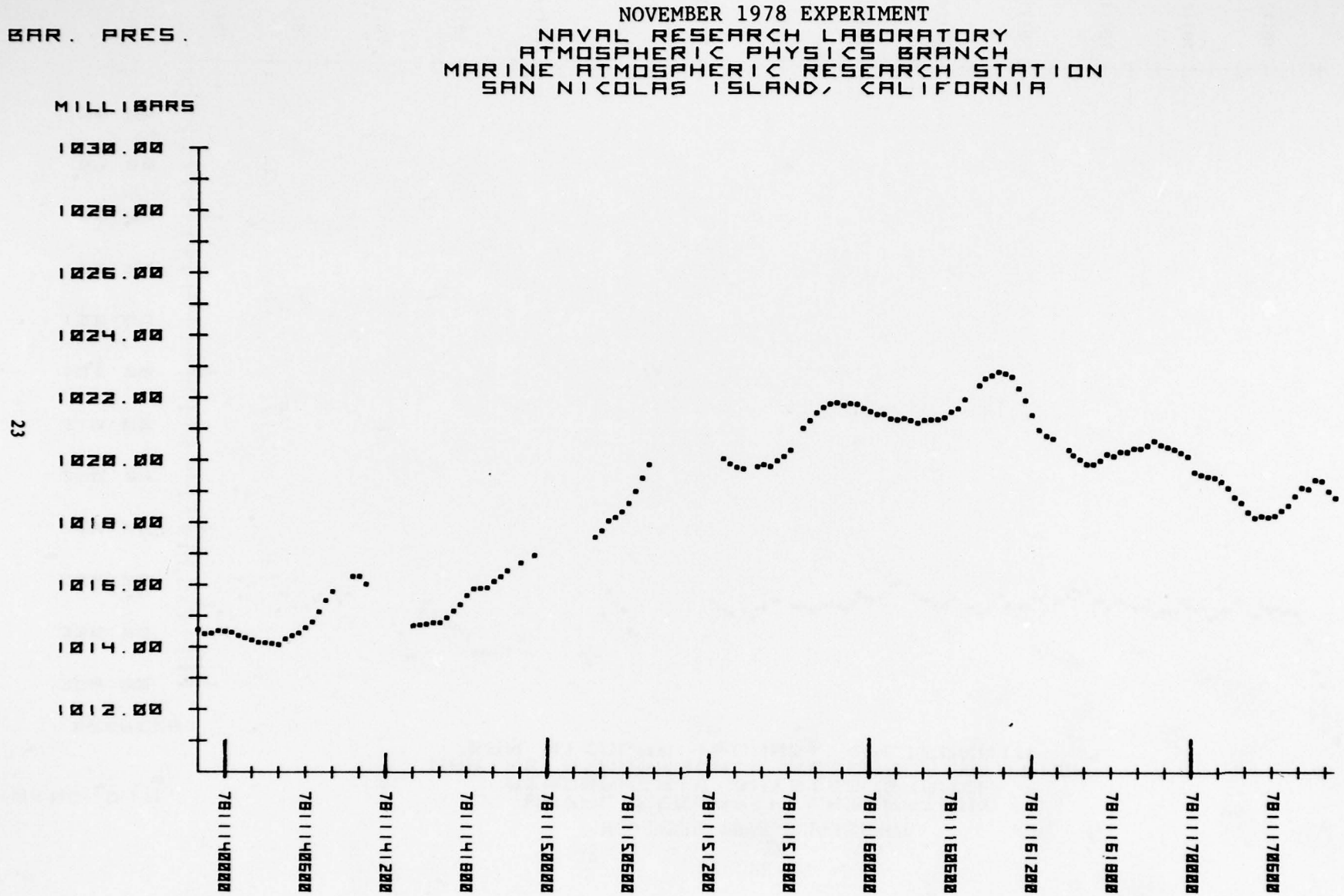

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
BAR. PRES.
MILLIBARS
1030.00
1028.00
1026.00
1024.00
1022.00
1020.00
1018.00
1016.00
1014.00
1012.00
781114000000
781114060000
781114120000
781114180000
781115000000
781115060000
781115120000
781115180000
781116000000
781116060000
781116120000
781116180000
781117000000
781117060000

FIGURE 15

NOVEMBER 1978 EXPERIMENT

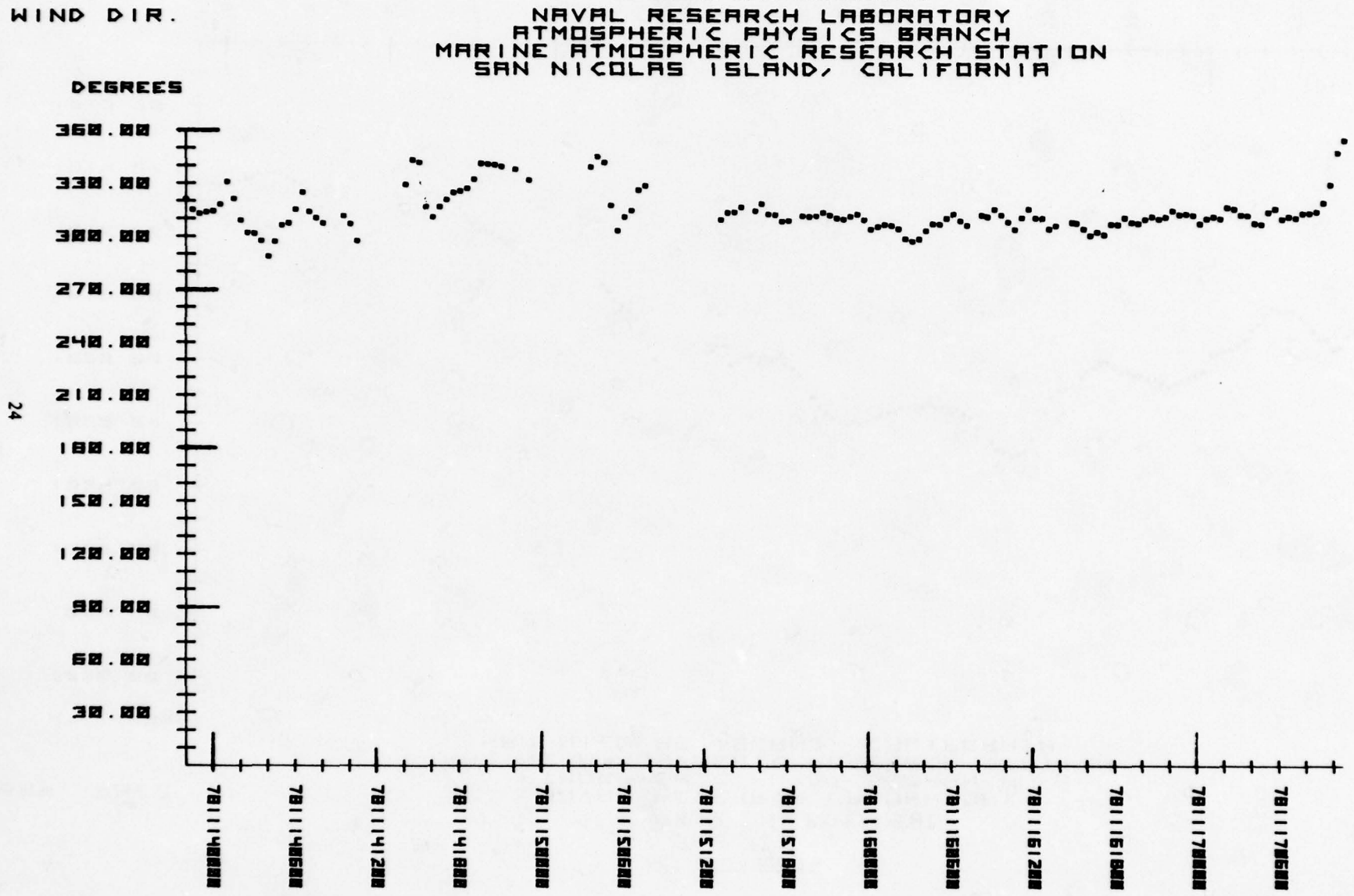


FIGURE 16

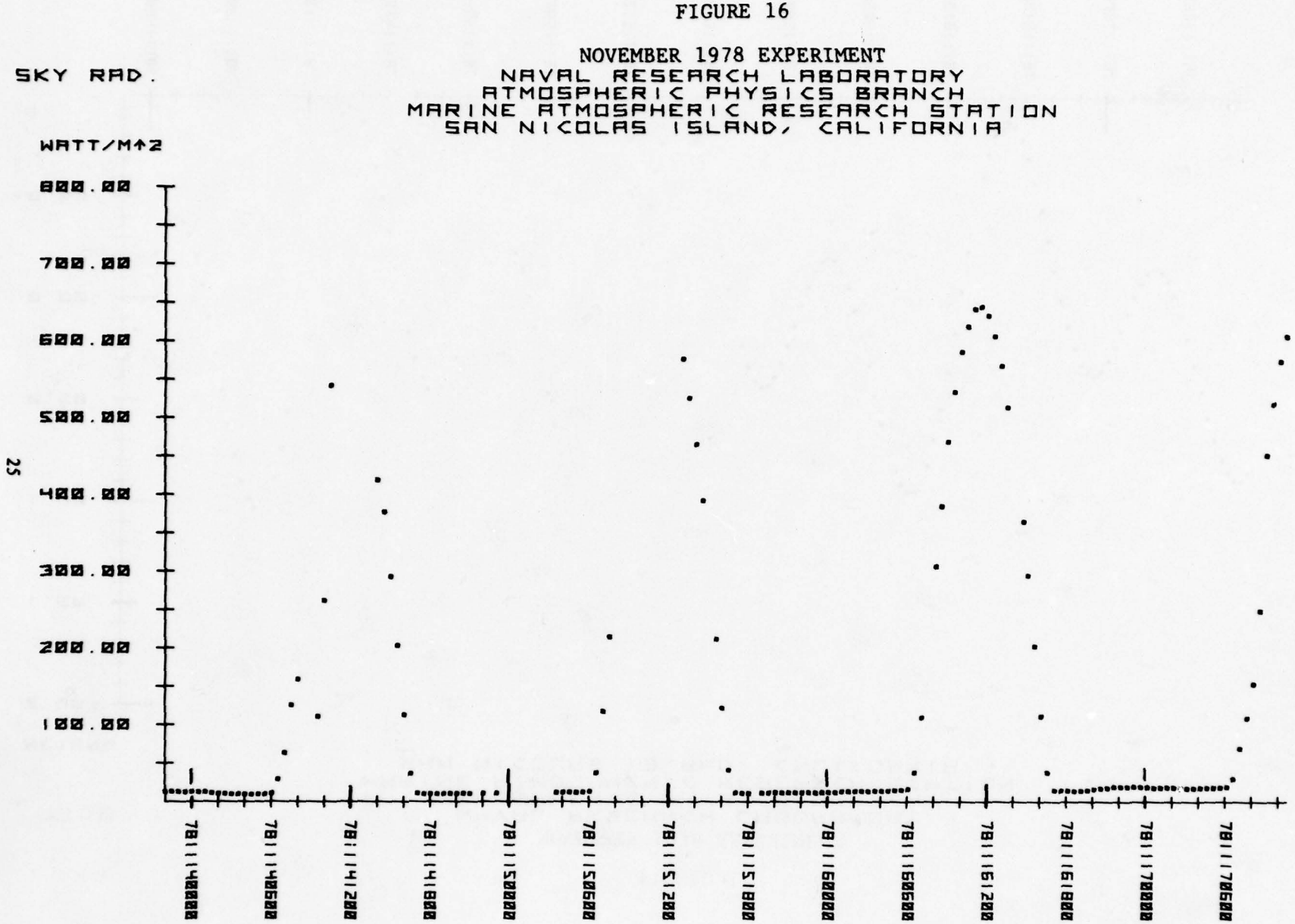
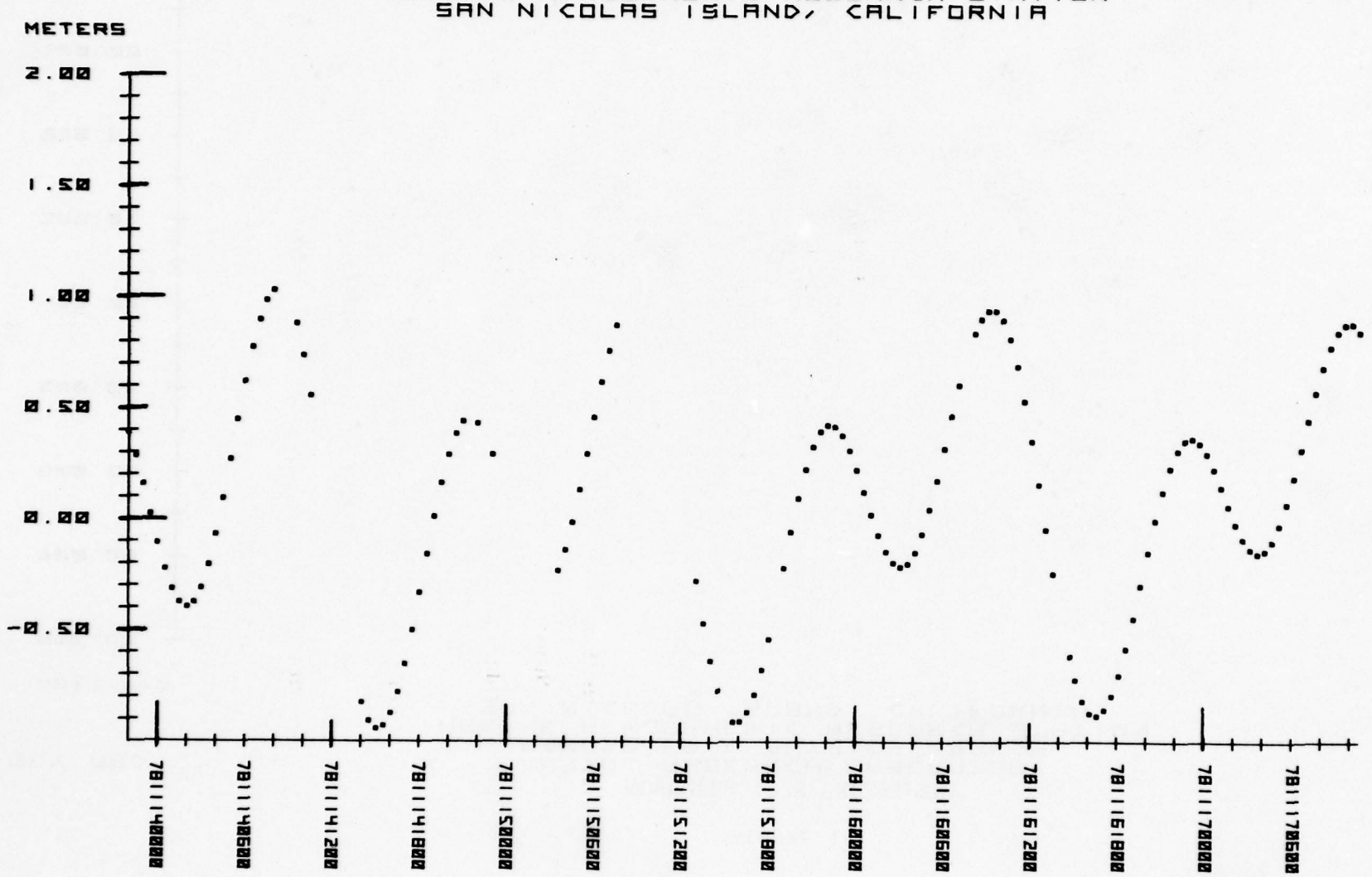

SKY RAD.
NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
WATT/M↑2
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
781114000
781114060
781114120
781114180
781115000
781115060
781115120
781115180
781116000
781116060
781116120
781116180
781117000
781117060

FIGURE 17

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA



PROFILE AND BULK STABILITY ANALYSIS: AN ESCARPMENT EFFECT

The profile measurement technique is considered to be more desirable than the bulk aerodynamic estimation technique for characterizing the atmosphere because it entails fewer assumptions and approximations. However, the much simpler bulk technique can play an important role in estimating the order of magnitude and sign of the stability and flux parameters. This experiment has brought to light a much larger than anticipated discrepancy between the profile and bulk derived stability values. What constitutes a reasonable agreement between the profile and bulk data is still, however, an unresolved issue.

The accurate measurement of the profile Richardson stability parameter is the "linchpin" of the profile technique for computing the various flux parameters. Thus in this report, we confined our analysis to the apparent discrepancy in the Richardson stability values. To facilitate this analysis, Figs. 18 through 36 (pp. 32-50) were prepared in an attempt to determine the most likely causes for the discrepancy. See ERRATA NOTE 3, page 60.

Figures 18 and 19: the profile (RI) and bulk (RIB) Richardson stability as a function of time (Run Number). The profile derived stability value generally tracked the bulk value but was subjected to significantly larger magnitude perturbations from the neutral or near zero state. There were two major discrepancies in the stability sign which occurred on 15 November (3:30-7:30) and 17 November (9:00-10:30). Since the profile technique contains fewer sweeping approximations than the bulk, it was not unexpected that the profile values contained more reading to reading variation or fine structure about a six hour mean. However, this could not account for the typical order of magnitude greater accentuated features in both the positive and negative values of the profile stability data.

Figure 20: the profile and bulk stability difference referenced to the bulk value ((RIB − RI)/RIB) as a function of time (Run Number). If the value of ±50% agreement were

arbitrarily chosen as the maximum difference of what could be considered a reasonable agreement between the profile and bulk values, then the two values were in agreement only 26% of the time.

Figures 21 and 22: the profile (RI) and bulk (RIB) stability as a function of the wind speed (WSB) at the 10 meter height. Above a wind speed of 7 m/sec, the two stability parameters displayed a similar systematic relationship to the wind speed. Below 7 m/sec, however, the profile stability data tended to divide into two diverging legs, one positive and one negative. Each leg was of greater relative magnitude than its single leg bulk counterpart.

Figure 23: the correlation between the profile (RI) and bulk (RIB) stability values. There was little correlation between the two values, except under neutral or near zero conditions.

Figure 24: the profile and bulk stability difference as a function of the profile potential temperature differential (PT1 − PT2). The potential temperature differential (plotted with the sign reversed) determines the sign of the profile stability and to a lesser extent its magnitude. The typical maximum differential temperature error was ±.006°C. No discernible pattern in the data was detected.

Figure 25: the profile and bulk stability difference as a function of the profile dew point differential (DP1 − DP2). The dew point differential (plotted with the sign reversed) played only a minor role in the profile stability, since for this experiment the humidity was included only in the ambient virtual potential temperature term and not in the profile temperature partial derivative. The typical maximum differential dew point error was ±0.14°C. No discernible pattern in the data was detected.

Figures 26 and 28: the profile and bulk stability difference as a function of the profile wind speed differential (WS1 − WS2). The square of the wind speed differential appears in the denominator ($1/(WS1 - WS2)^2$) of the profile stability Richardson number equation. Although it played no role in determining the stability sign, it played the dominant role in determining

the profile stability magnitude. In general, it was found that the smaller the differential, the larger the stability discrepancy. The largest stability discrepancies occurred when the wind speed differential was less than 0.5 m/sec. A typical maximum differential wind speed measurement error was ±4% of the ambient wind speed.

Figure 27: the profile and bulk stability difference as a function of the wind speed (WSB) at the 10 meter height. In general, it was found that the lower the ambient wind speed the larger the stability discrepancy. The largest stability discrepancies occurred when the wind speed was below 7 m/sec.

Figure 29: the profile and bulk stability difference as a function of wind direction. Although the island escarpment upon which the readings were taken could be said to be very crudely symmetrical as a function of wind direction (to 90° either side of the Northwest), the path length of the wind field over the rocks between the escarpment and the water varied significantly as a function of wind direction. No discernible pattern in the data was detected.

Figure 30: the profile and bulk stability difference as a function of sky and solar radiation. It had been speculated that convective heating, particularly under low wind speed conditions, or reflected solar radiation from the island escarpment may have affected the temperature profile measurements. No discernible pattern in the data was detected.

Figure 31: the profile and bulk stability difference as a function of tide height. The path length of the wind field over the rocks between the measurement escarpment and the water varied from zero to one hundred meters in length depending upon the tide. No discernible pattern in the data was detected.

Figure 32: the profile and bulk stability difference as a function of the potential air temperature at 10 meters minus the bulk water temperature (PTWTB). No discernible pattern in the data was detected.

Figure 33, 34, and 35: the profile and bulk stability difference as a function of the bulk derived friction velocity (FRICVB), drag coefficient at 10 meters (DRAGB), and the roughness length (RUFLB). In general, it was found that when these three bulk parameters decreased, the stability discrepancy increased. However, this same relationship was observed with the ambient wind speed and the above patterns were due to the way in which these bulk parameters are "coupled" to the wind speed measurement.

Figure 36: the profile and bulk stability differences as a function of the profile derived roughness length (RUFL). In general, the smaller the profile derived roughness length, the larger the stability discrepancy. The values ranged from one to twelve orders of magnitude (!) smaller than 1×10^{-5} meters. Compare figures 35 and 36. Values ranging smaller than 1×10^{-5} meter are physically unrealistic and were a conspicuous telltale symptom of the root cause. The same type of results were observed at the Risø, Denmark, test site and reported by Panofsky and Peterson[5].

From the physically unrealistic telltale profile roughness length values reported by Panofsky and Peterson[5], Jensen and Peterson[2] successfully accounted for the phenomenon by demonstrating an escarpment induced height dependent horizontal acceleration of the wind field profile. They further demonstrated that for the heights and distances such as those which exist at the San Nicolas Island test site, the lower level wind speed measurement would be accelerated more than the upper level measurement. This results in steeping the wind speed profile slope, decreasing the wind speed differential, and increasing the relative magnitude of the profile stability value independent of its sign. This explanation corresponded to the results demonstrated by our stability analysis.

Although there is, as of yet, no suitable explanation for the two instances of profile stability sign reversal, there is no evidence in this experiment to indicate any detectable influence of the island on the temperature or humidity field profiles.

Due to the fact that an accurate and reliable bulk water temperature measurement is crucial to the bulk aerodynamic technique, and that such a system would not be available until the next field experiment (May 1979), it was decided to limit the scope of this report to a determination and evaluation of the island escarpment problem. It would be left to the next experiment to provide a suitable correction for the island escarpment phenomenon.

FIGURE 18

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

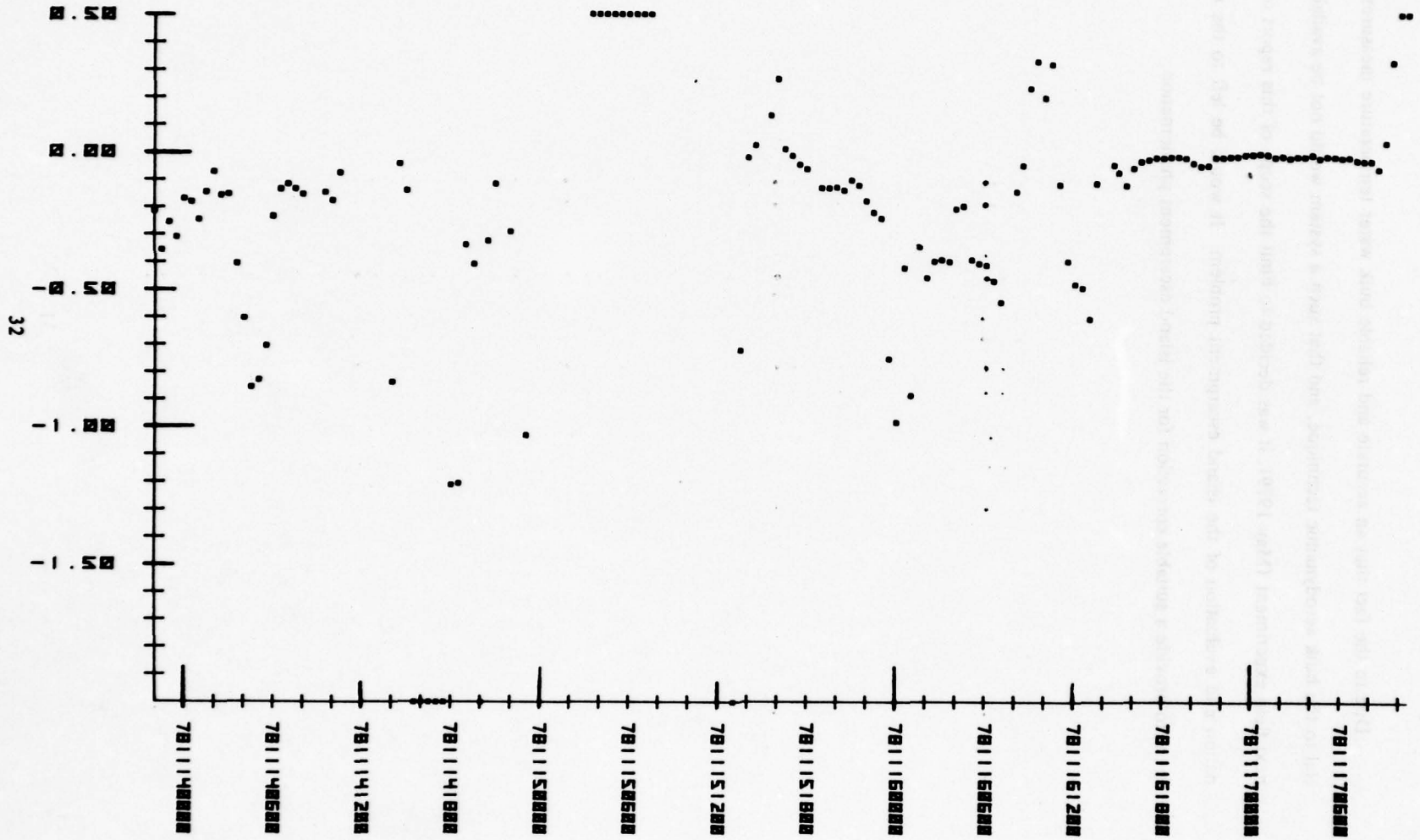


FIGURE 19

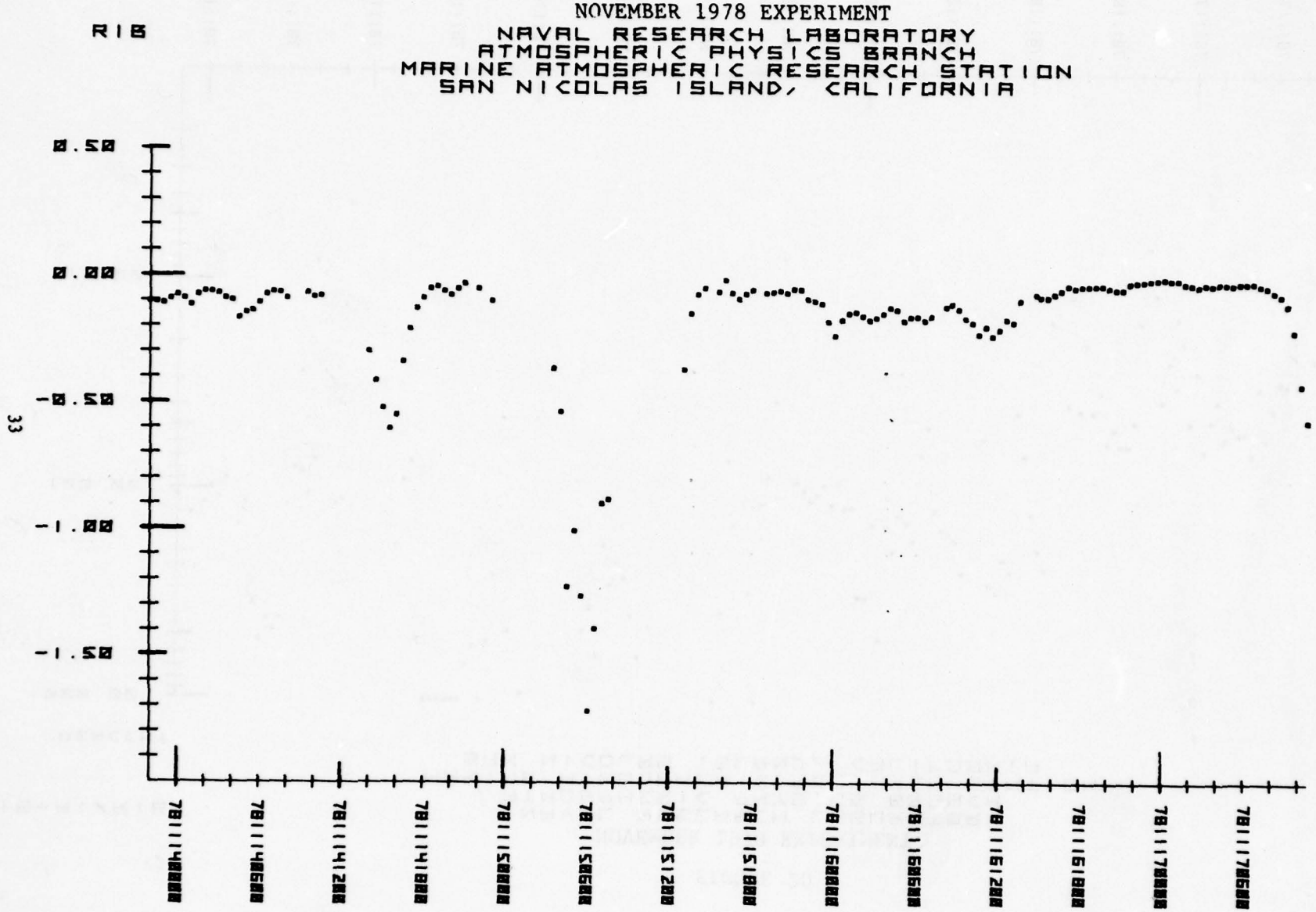

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB
0.50
0.00
-0.50
-1.00
-1.50
78111400000
78111406000
78111412000
78111418000
78111500000
78111506000
78111512000
78111518000
78111600000
78111606000
78111612000
78111618000
78111700000
78111706000

FIGURE 20

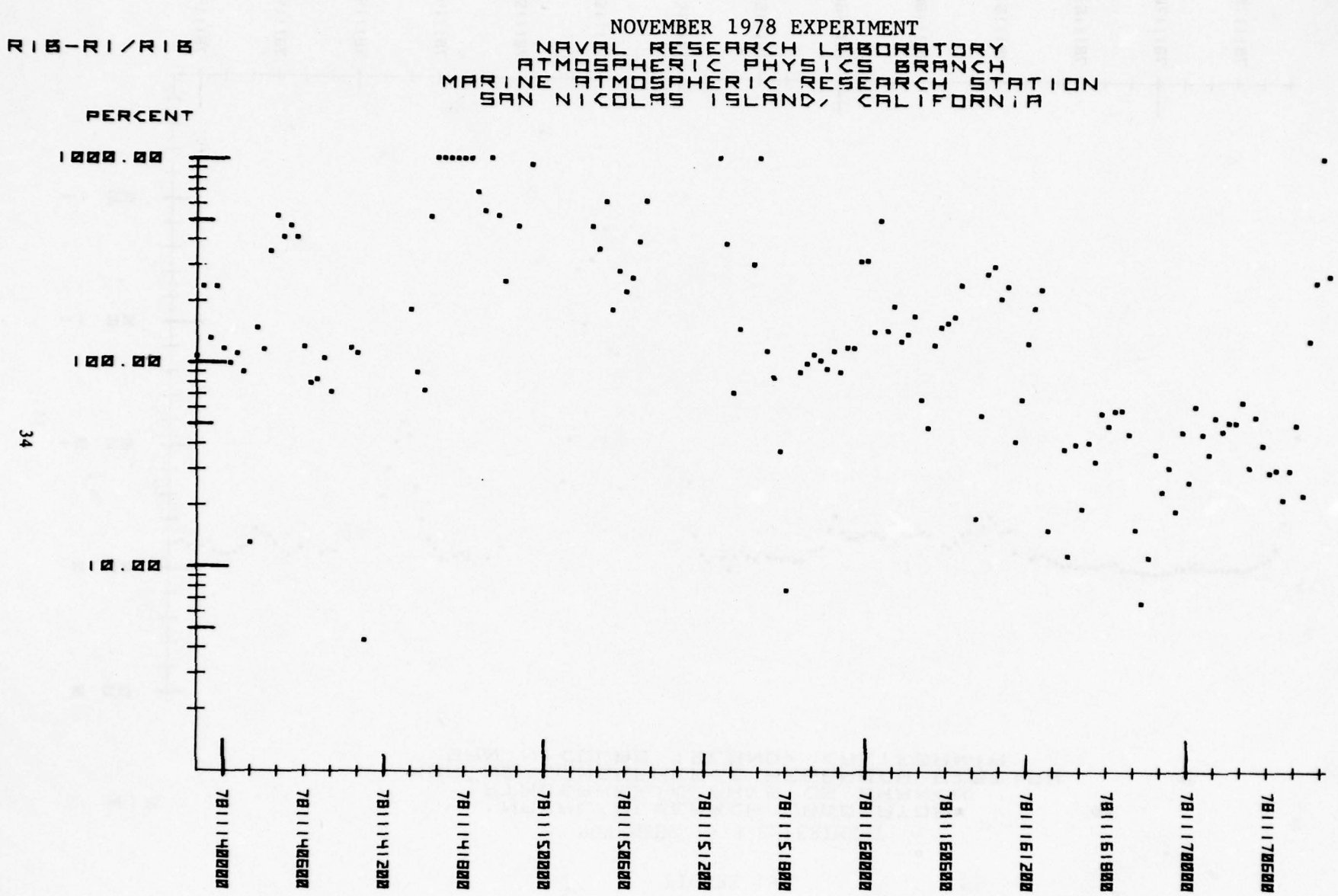

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
R1B-R1/R1B
PERCENT
1000.00
100.00
10.00
78111400000
78111404500
78111409000
78111413500
78111418000
78111422500
78111427000
78111431500
78111436000
78111440500
78111445000
78111449500
78111454000
78111458500

FIGURE 21

NOVEMBER 1978 EXPERIMENT

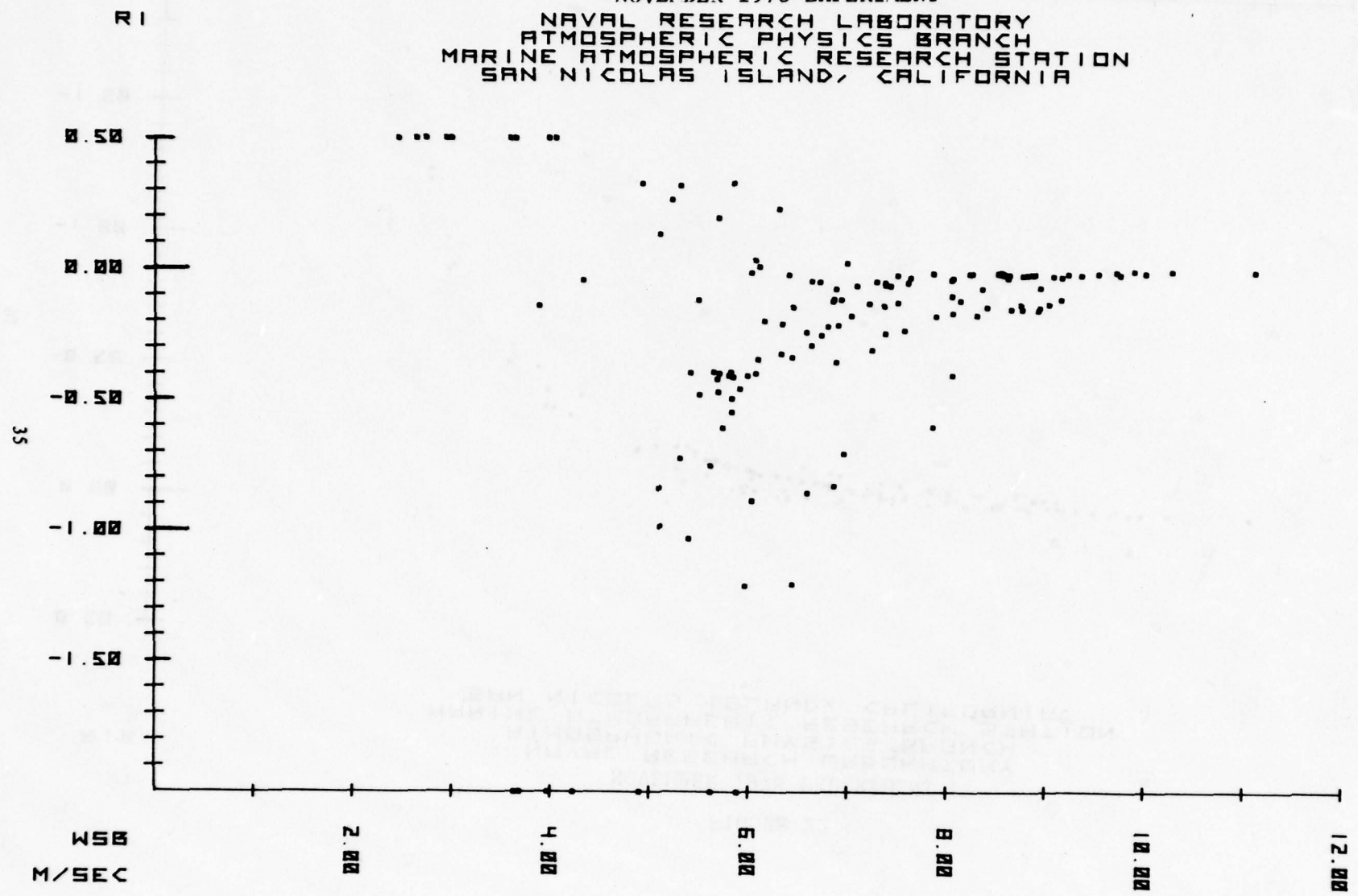


FIGURE 22

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

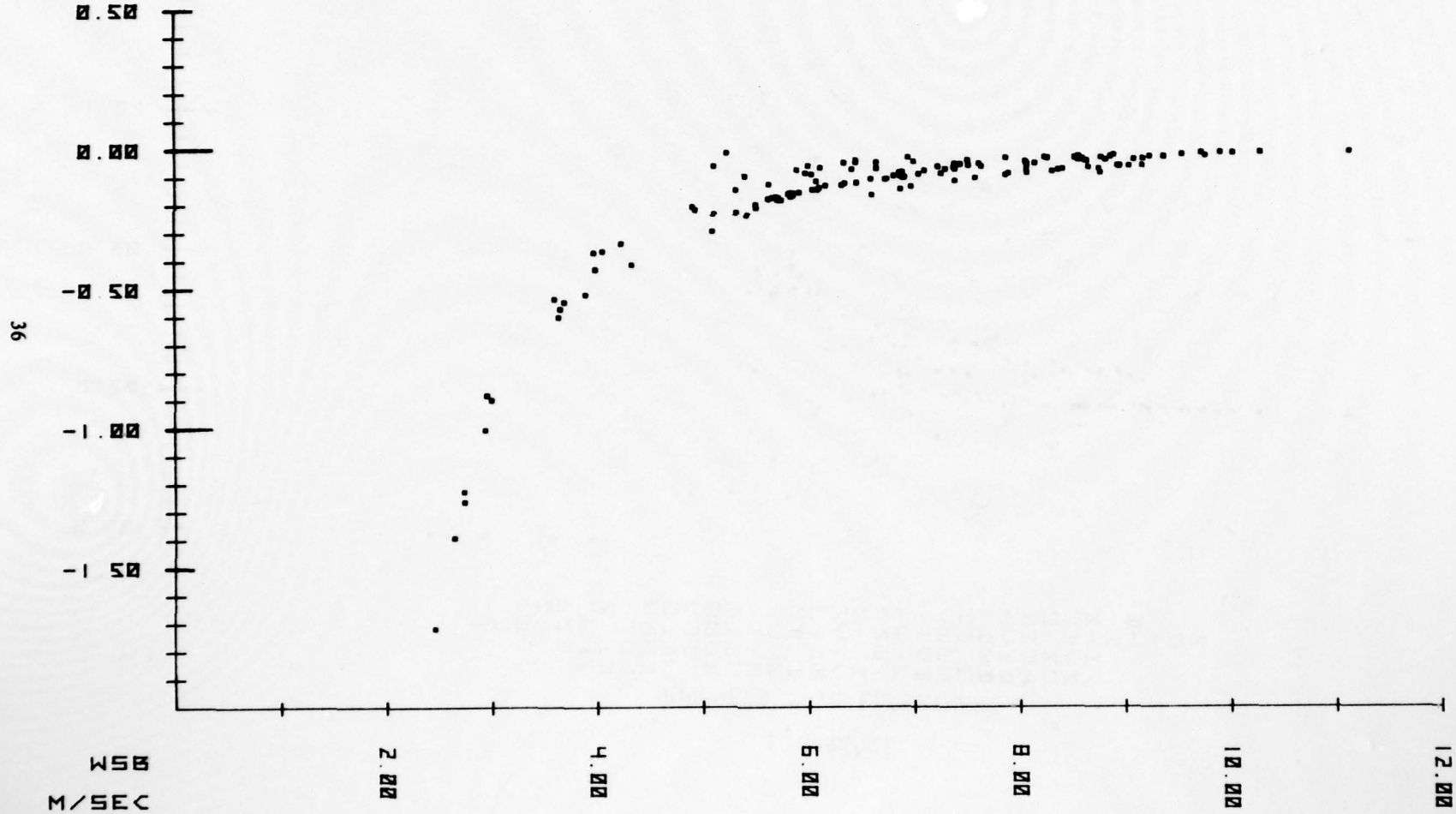


FIGURE 23

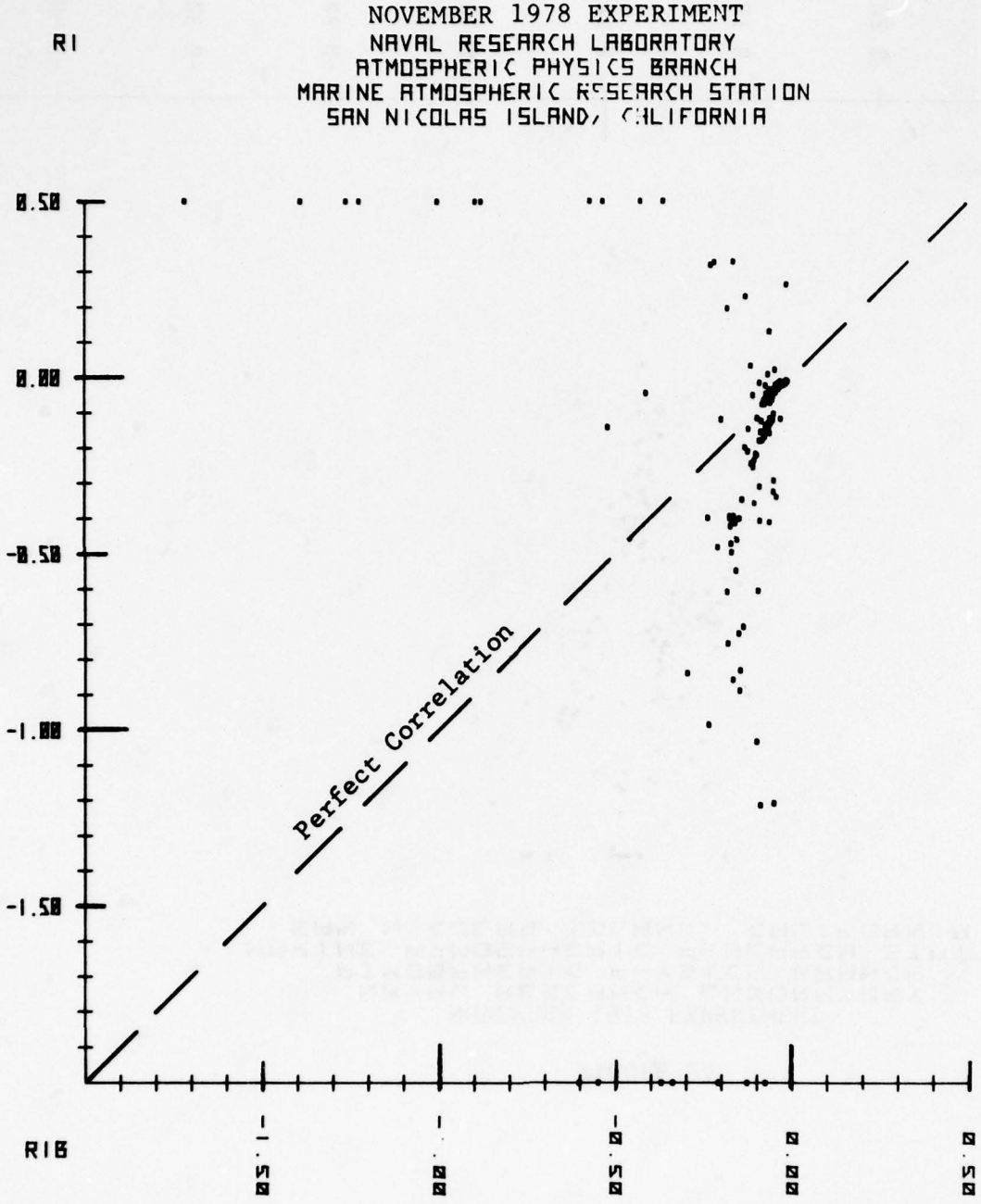

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
R1
R16
0.50
0.00
-0.50
-1.00
-1.50
Perfect Correlation
-1.50
-1.00
-0.50
0.00
0.50

FIGURE 24

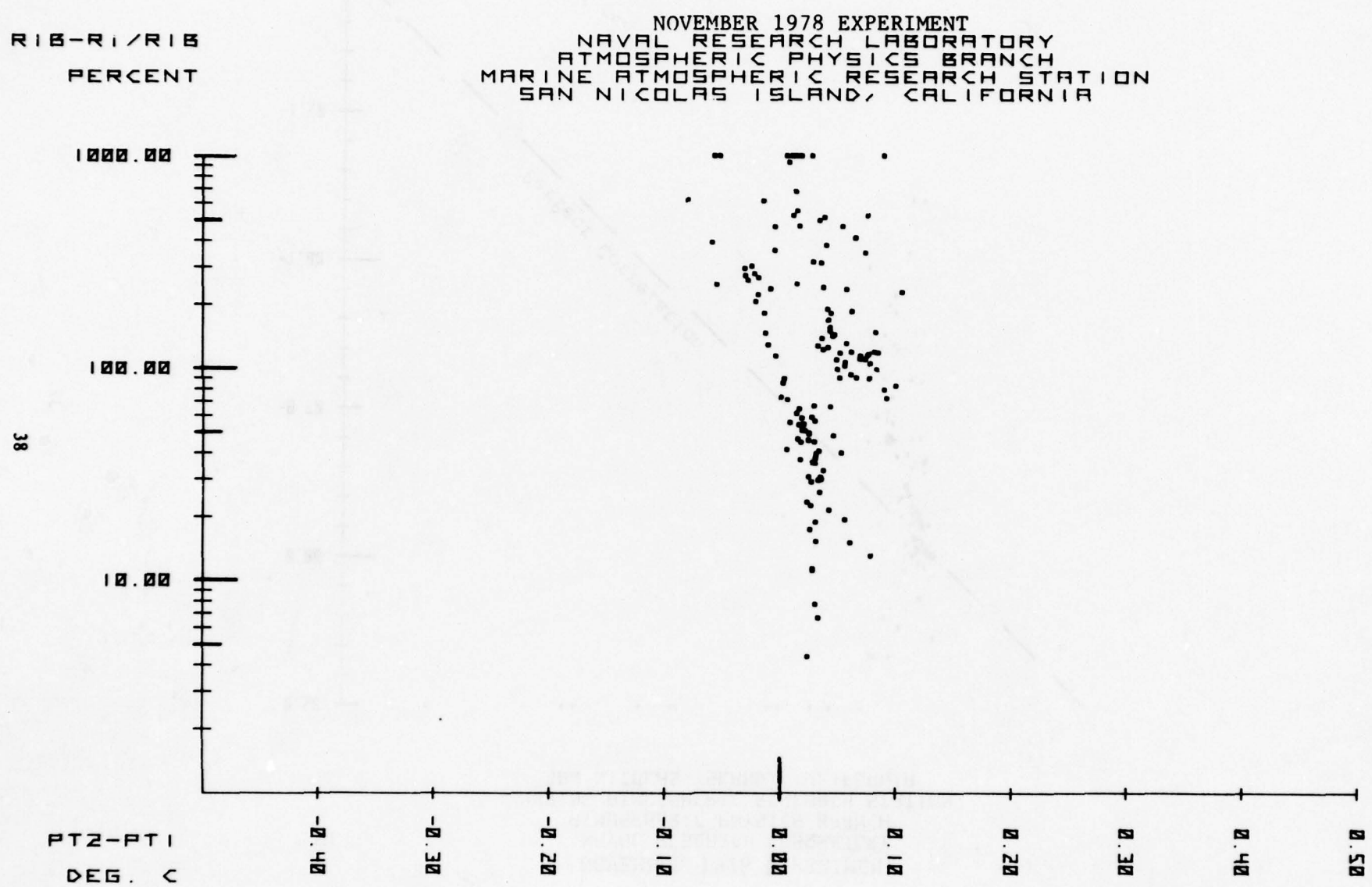

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
PT2-PT1
DEG. C
-0.40
-0.30
-0.20
-0.10
0.00
0.10
0.20
0.30
0.40
0.50

FIGURE 25

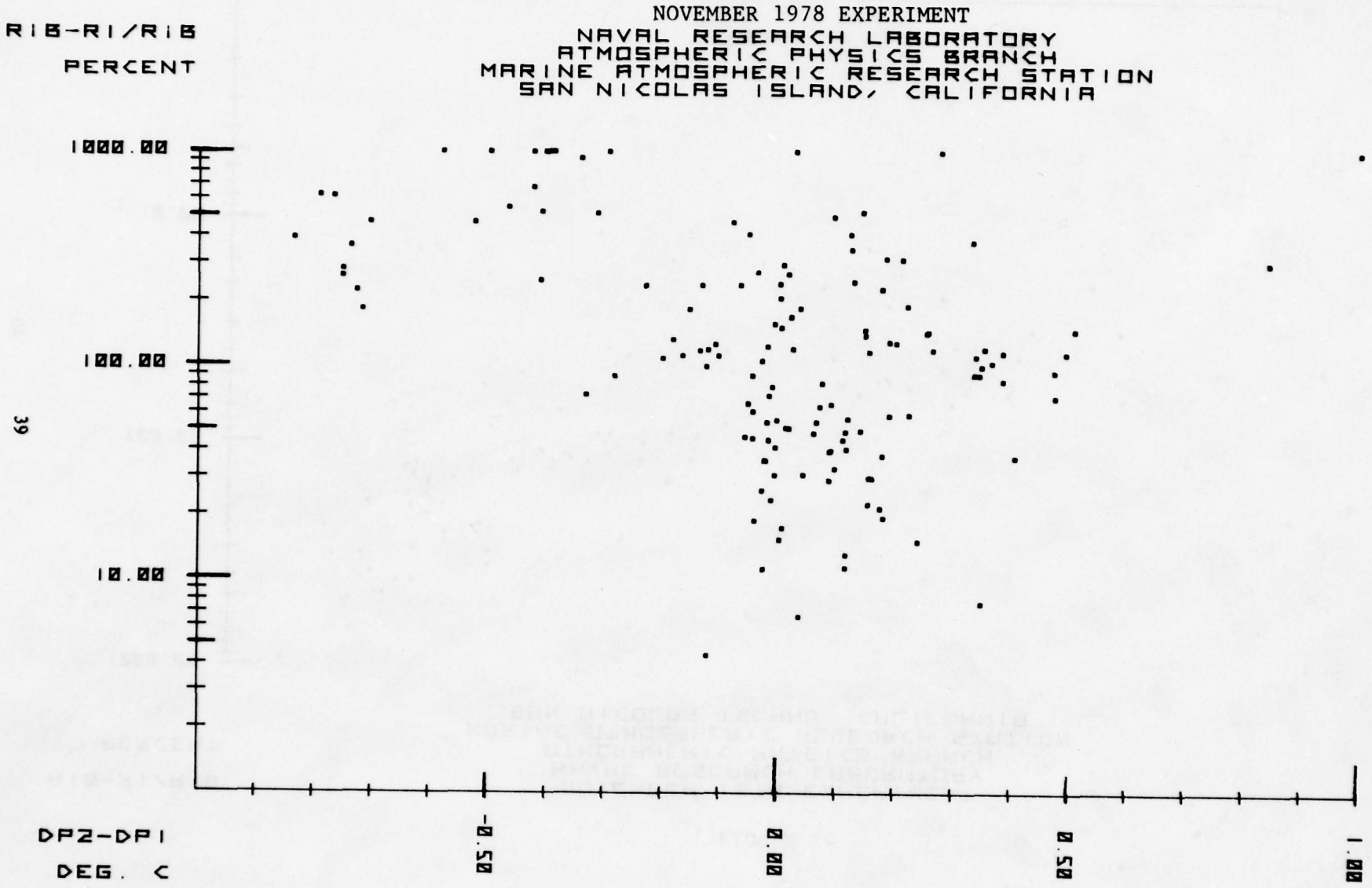

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
DP2-DP1
DEG. C
-0.50
0.00
0.50
1.00

FIGURE 26

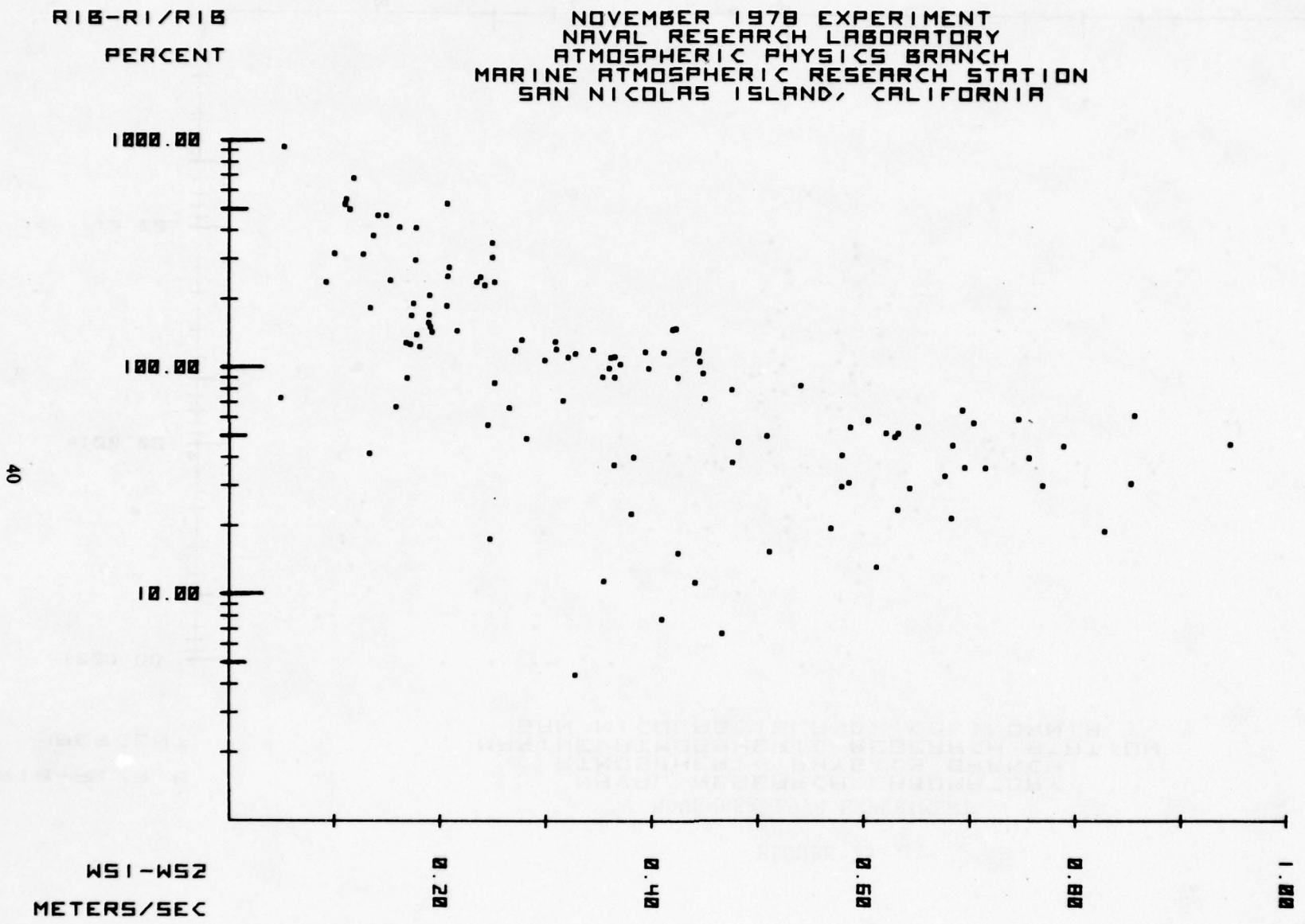

RIB-RI/RIB
PERCENT
NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
1000.00
100.00
10.00
40
0.20
0.40
0.60
0.80
1.00
WS1-WS2
METERS/SEC

FIGURE 27

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

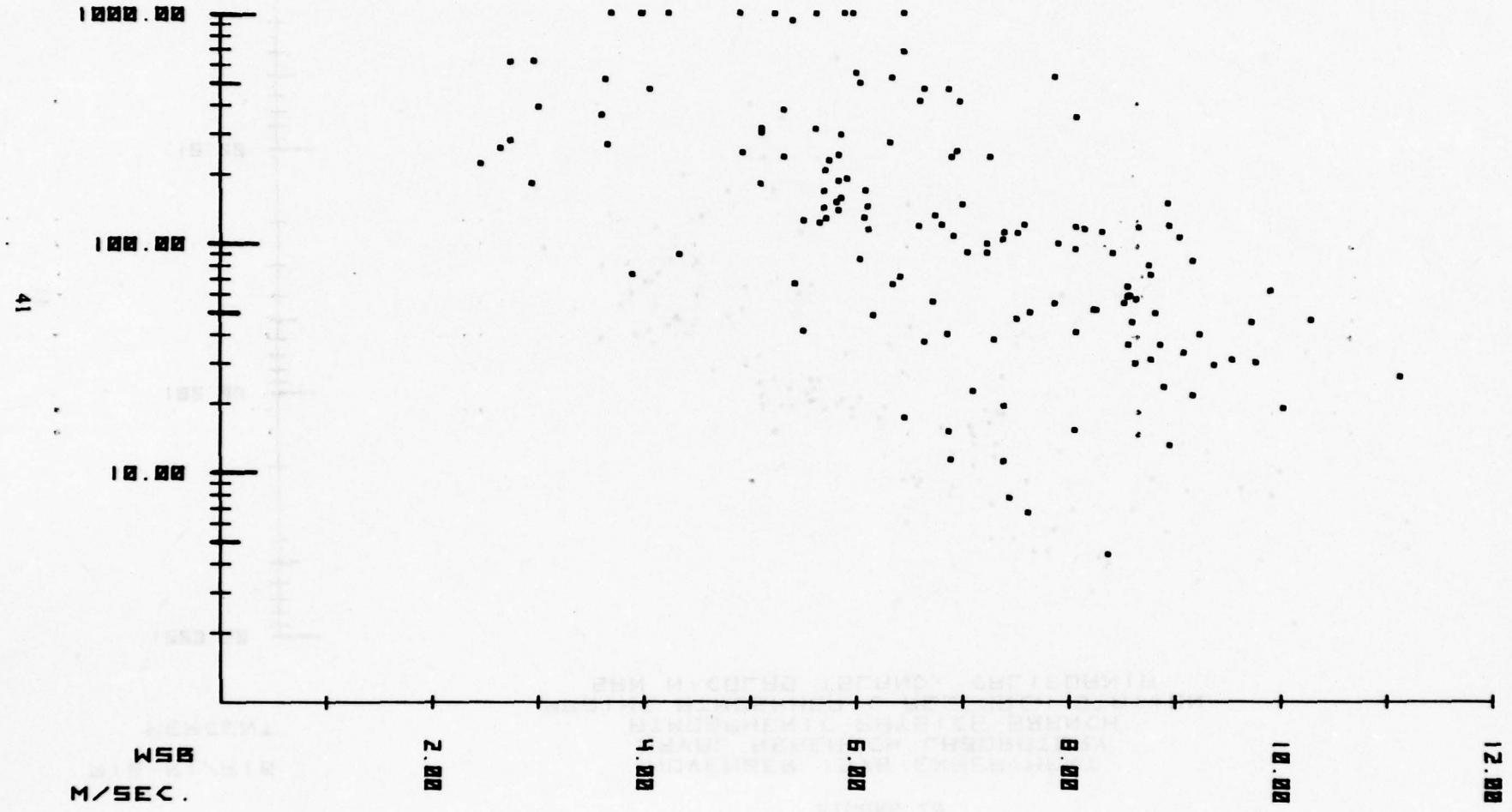


FIGURE 28

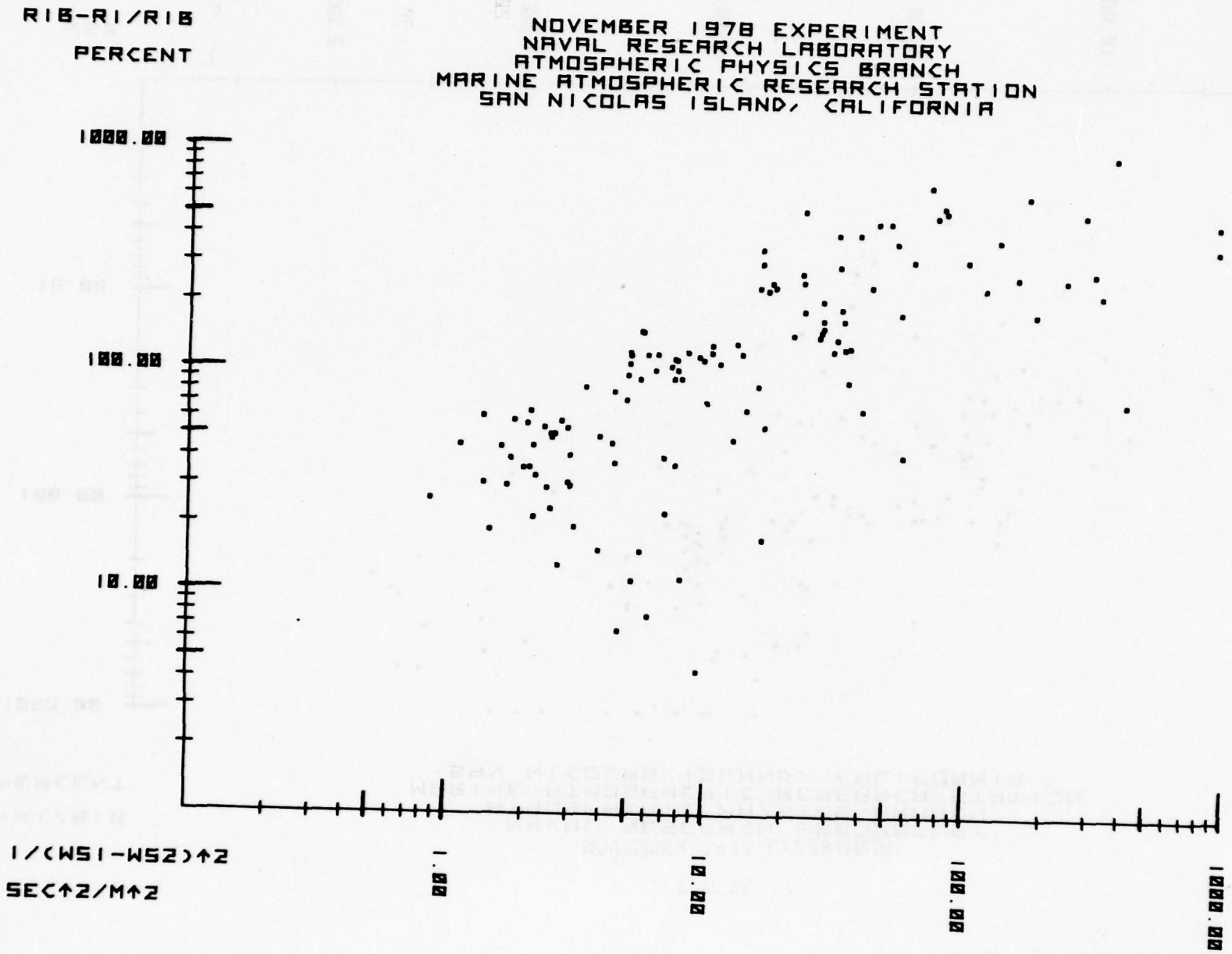

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
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10.00
1/(WS1-WS2)↑2
SEC↑2/M↑2
.01
.001
.0001

FIGURE 29

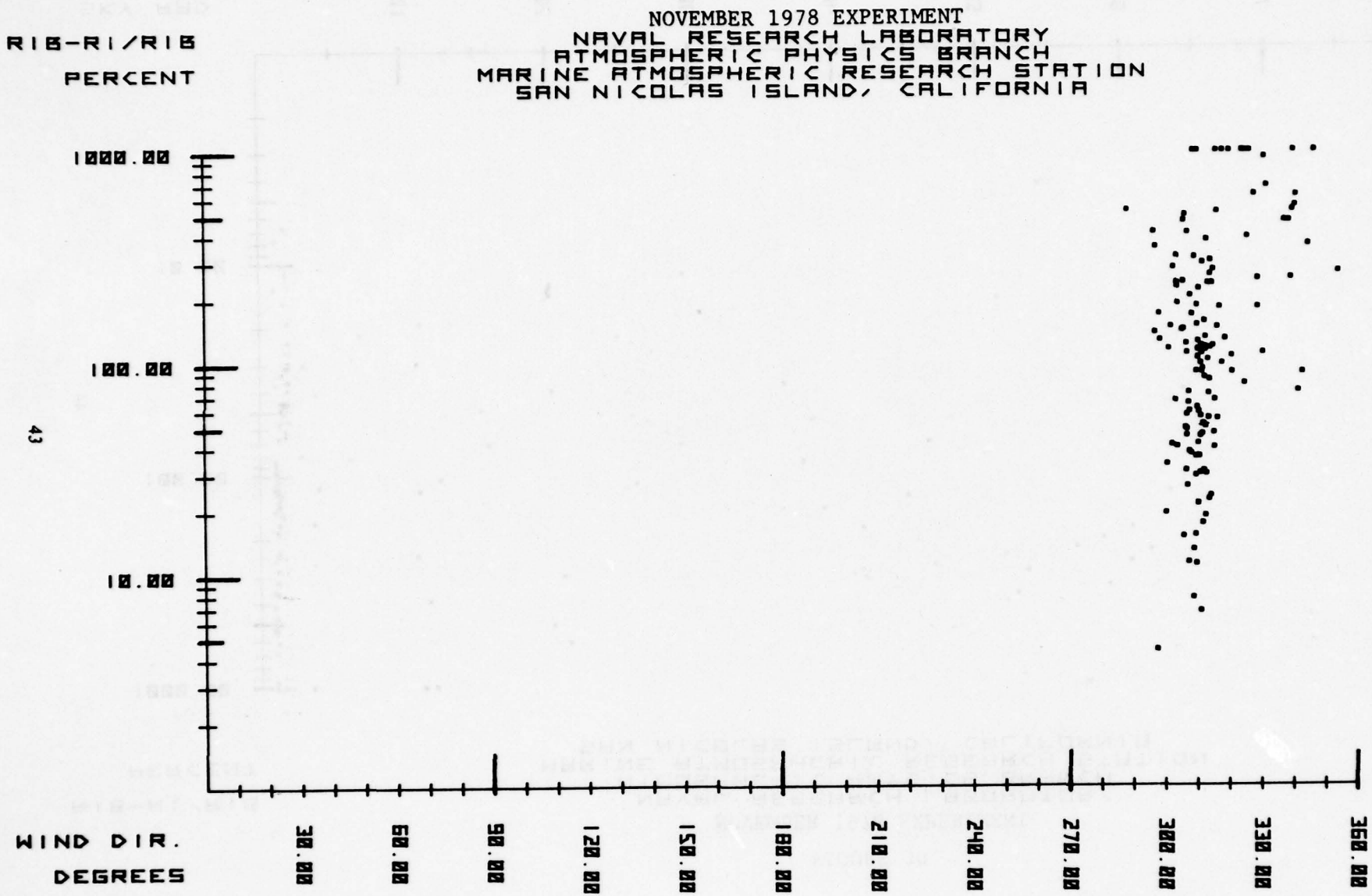

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
WIND DIR.
DEGREES
00.00
30.00
60.00
90.00
120.00
150.00
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210.00
240.00
270.00
300.00
330.00
360.00

FIGURE 30

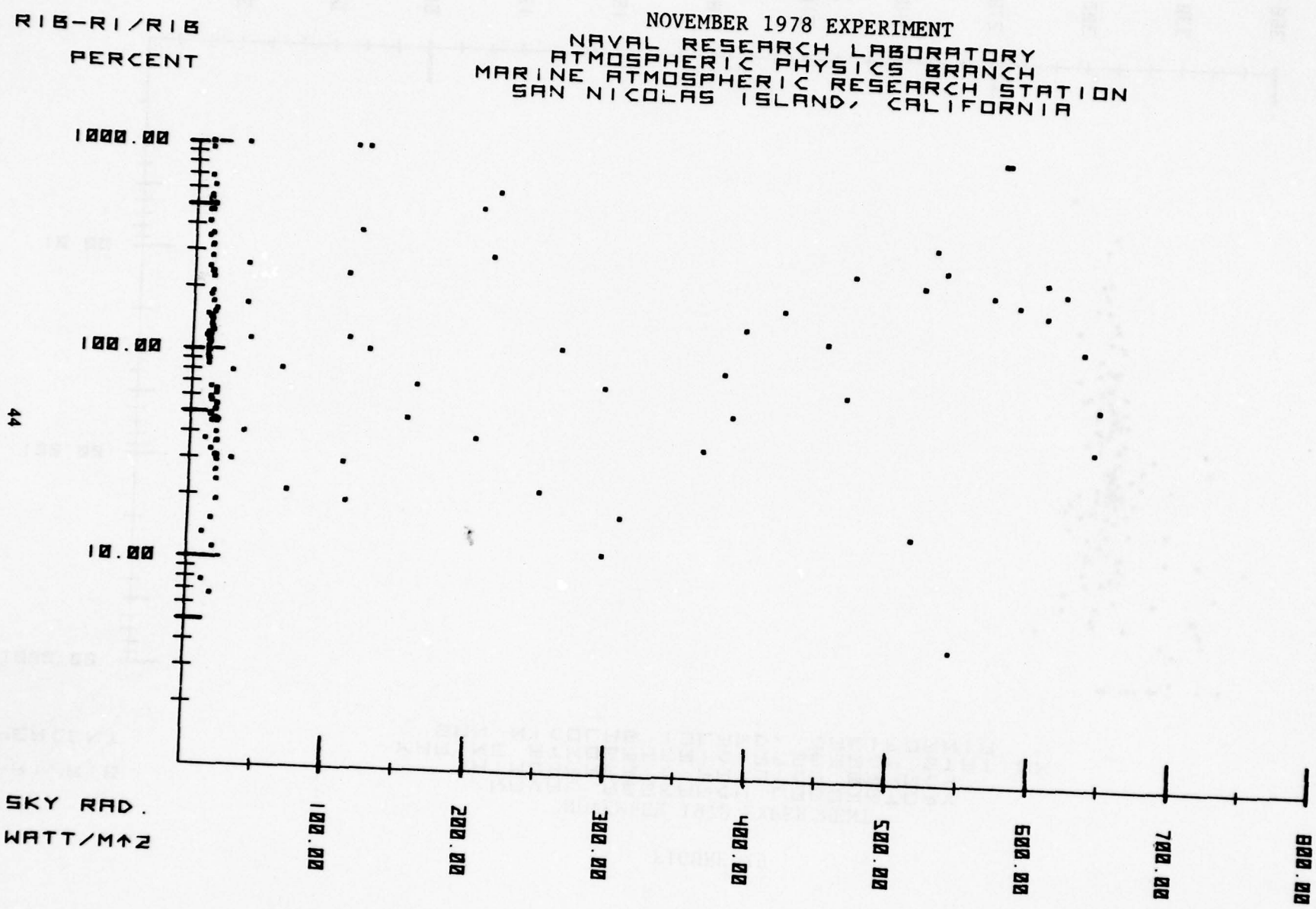

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
SKY RAD.
WATT/M↑2
00.001
00.002
00.003
00.004
00.005
00.006
00.007
00.008

FIGURE 31

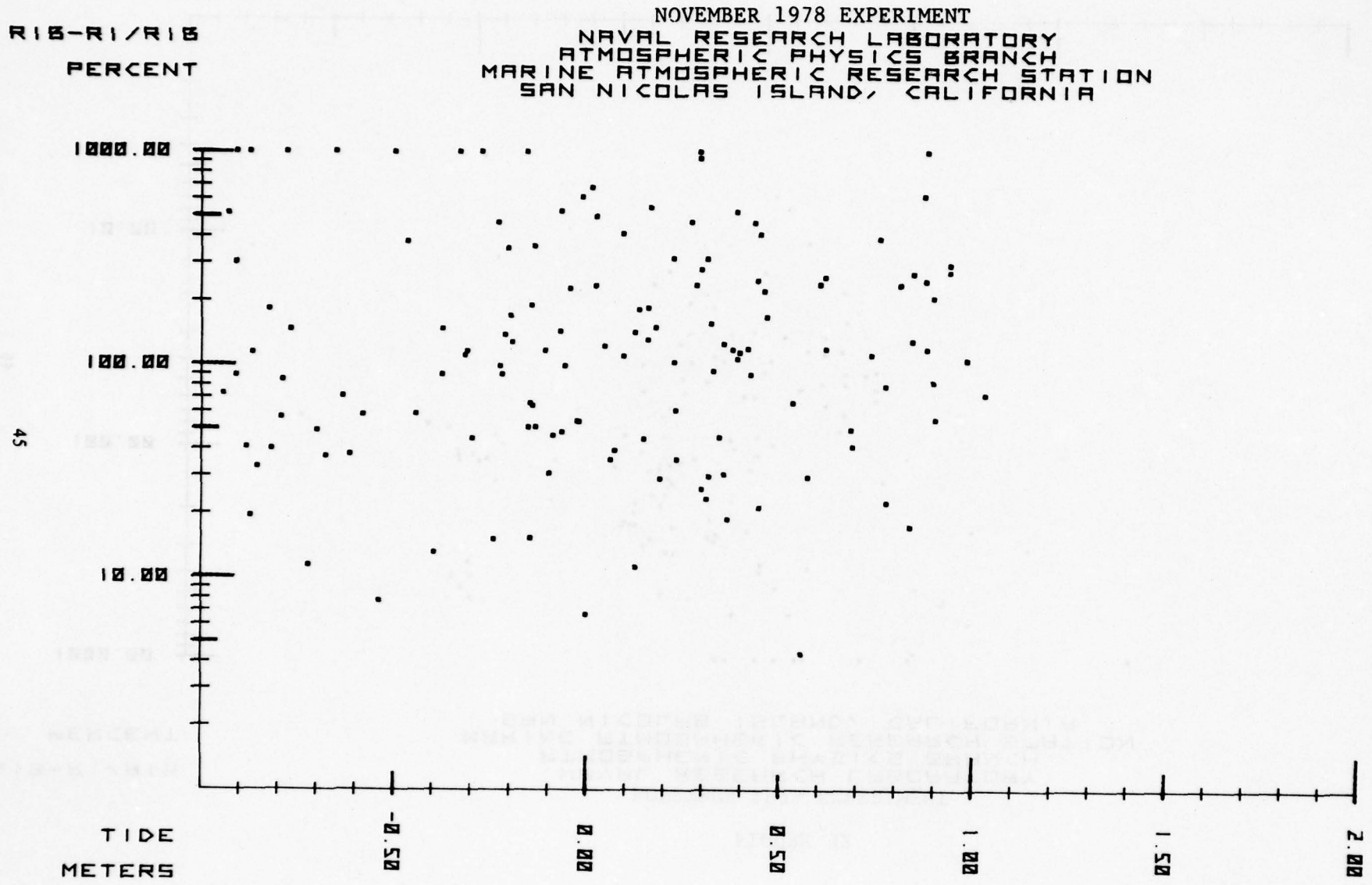

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
R15-R1/R15
PERCENT
1000.00
100.00
10.00
TIDE
METERS
-0.50
0.00
0.50
1.00
1.50
2.00

FIGURE 32

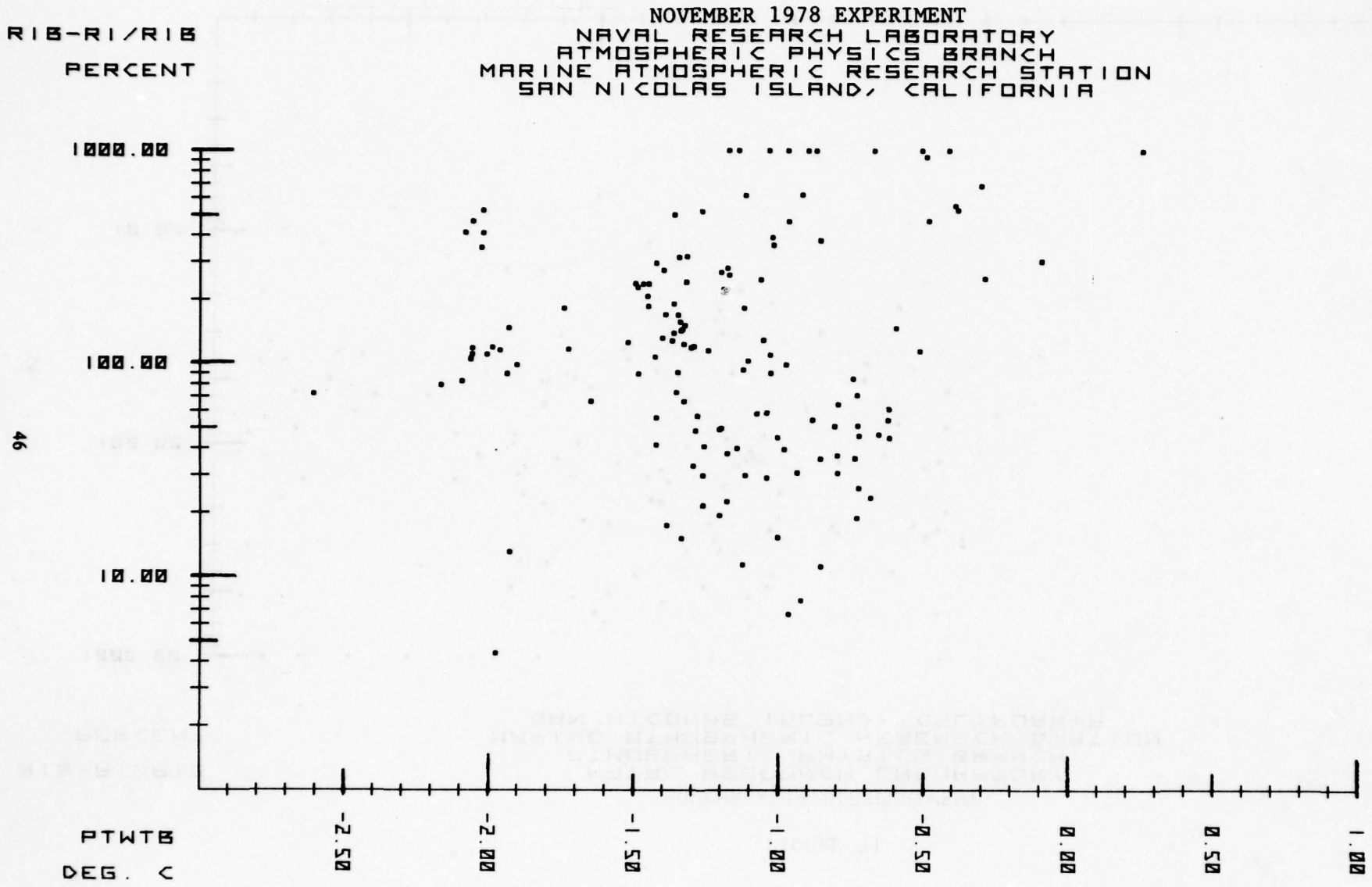

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
PTWTB
DEG. C
-2.50
-2.00
-1.50
-1.00
-0.50
0.00
0.50
1.00

FIGURE 33

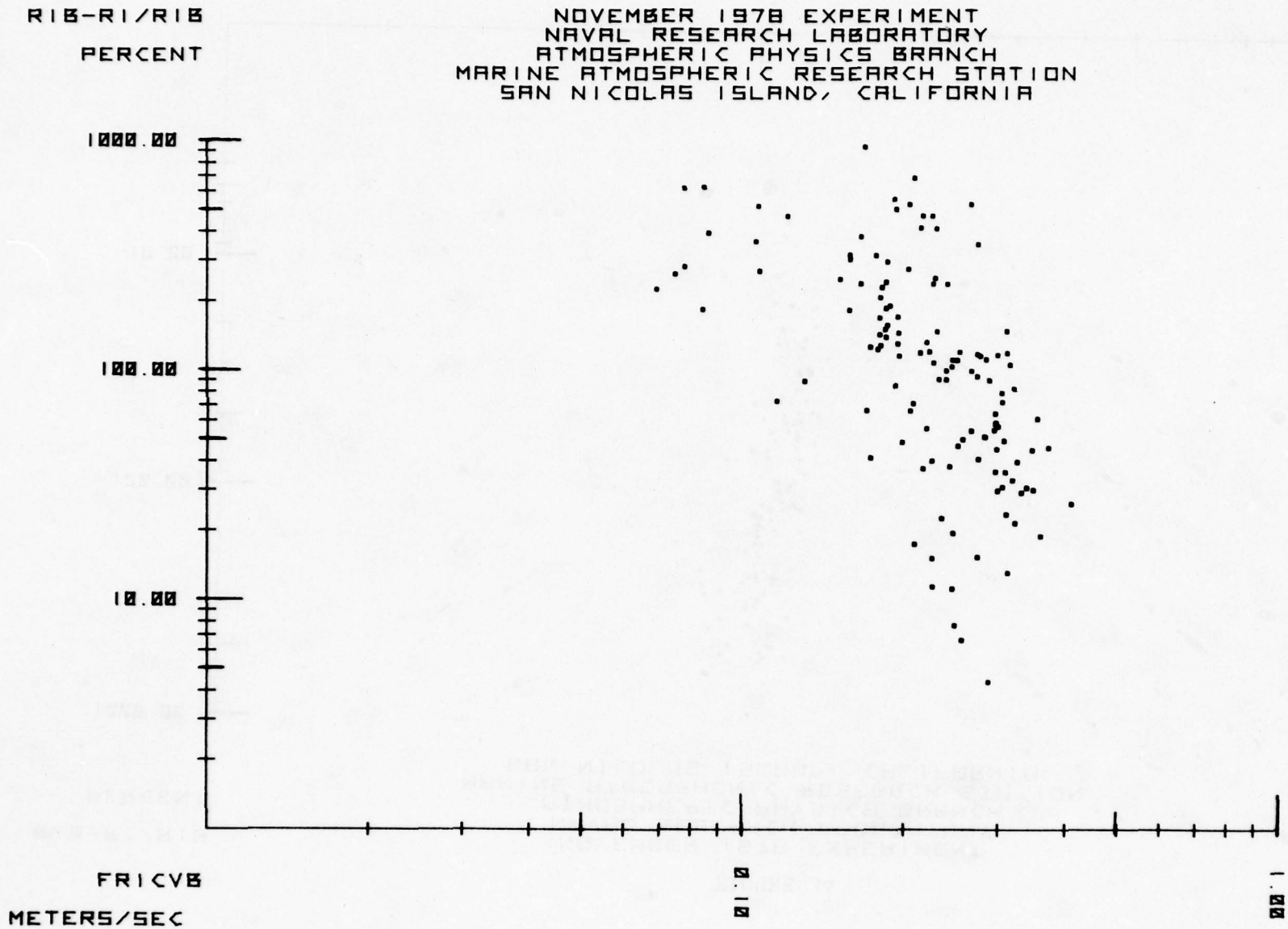

RIB-RI/RIB
PERCENT
NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
1000.00
100.00
10.00
FRICVB
METERS/SEC
0.0
0.1

FIGURE 34

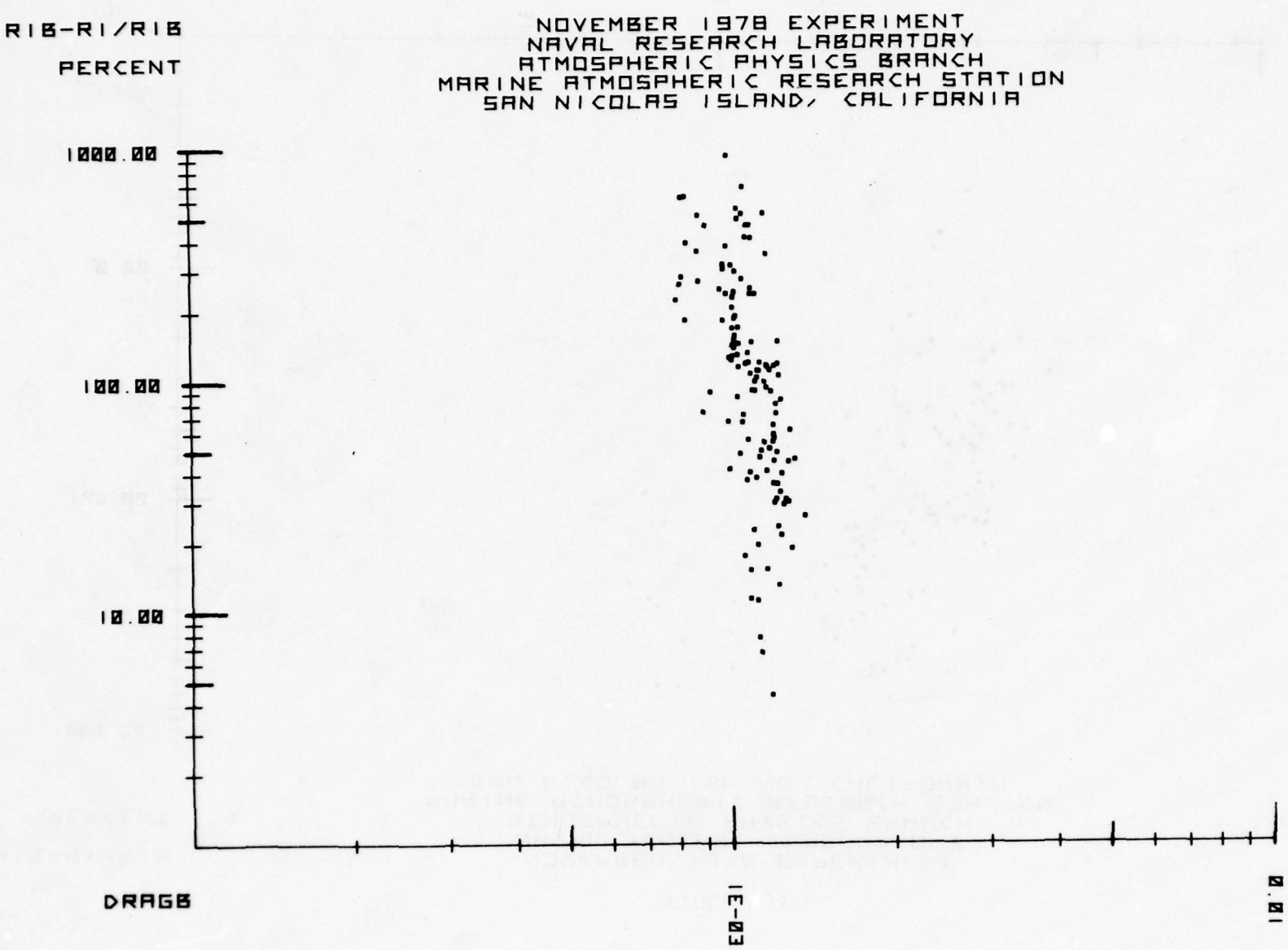

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MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
DRAGB
1E-03
10.0

FIGURE 35

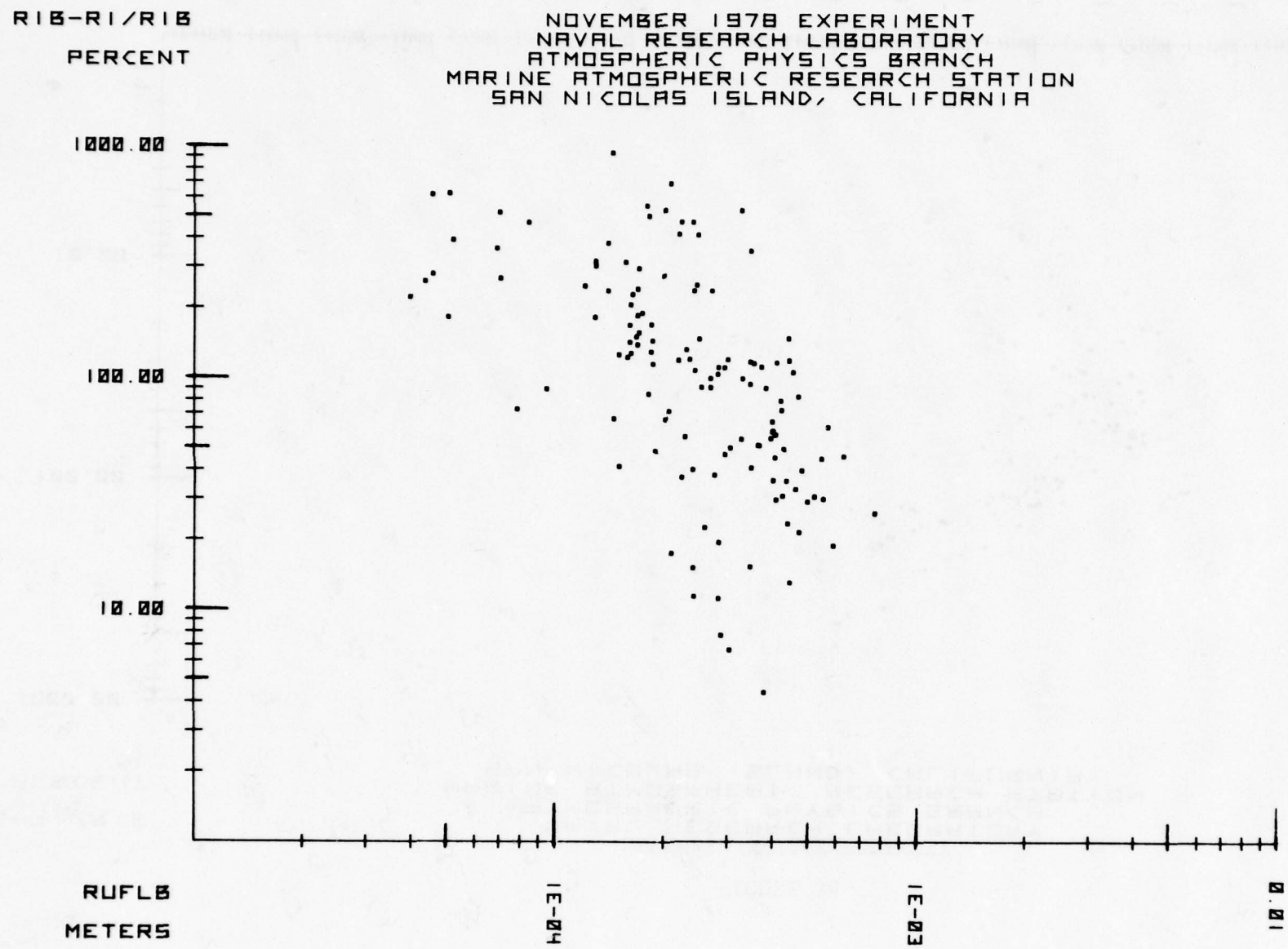
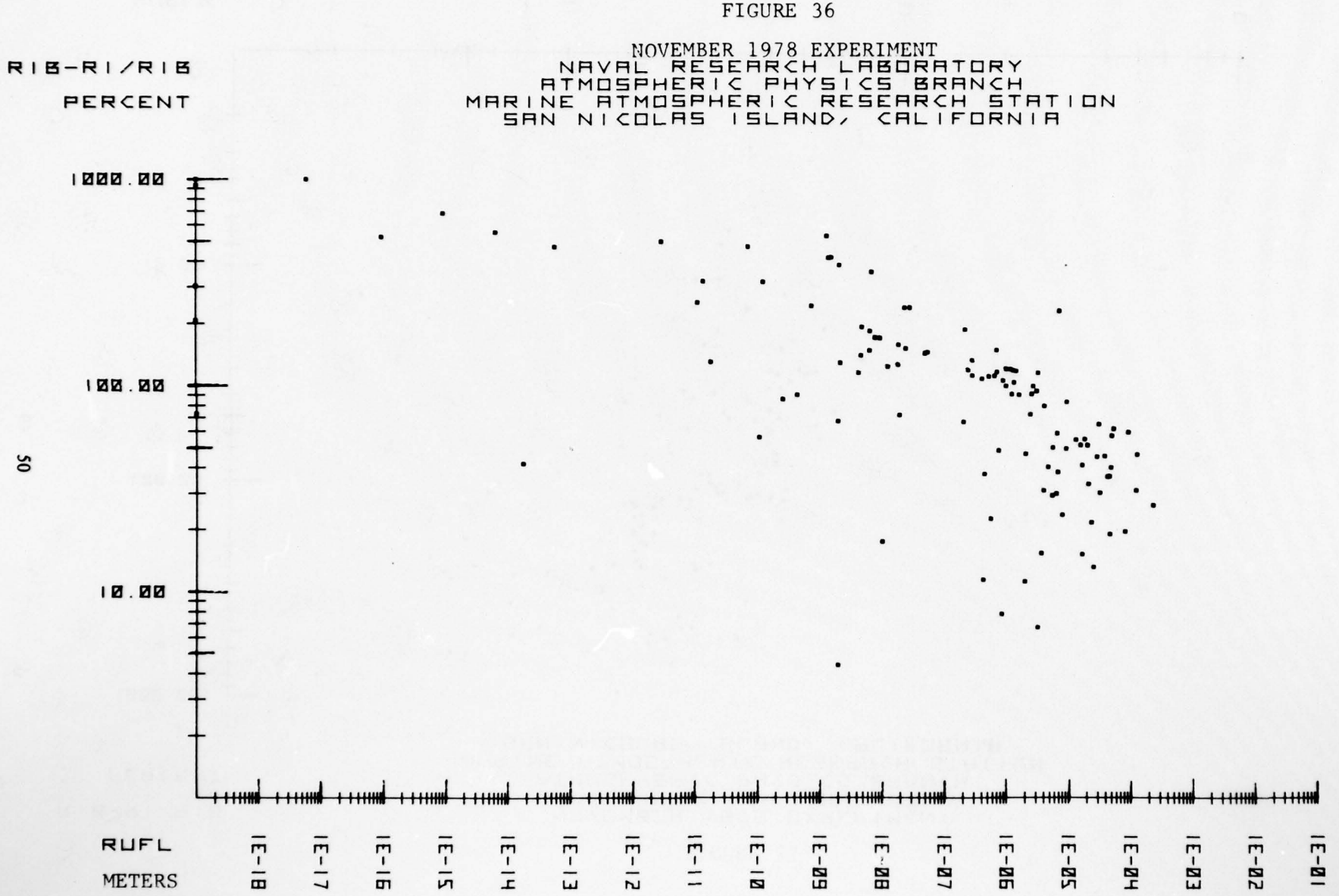

NOVEMBER 1978 EXPERIMENT
NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
RUFLB
METERS
1E-04
1E-03
0.01

FIGURE 36


NOVEMBER 1978 EXPERIMENT
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MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA
RIB-RI/RIB
PERCENT
1000.00
100.00
10.00
SO
RUFL
METERS
1E-18
1E-17
1E-16
1E-15
1E-14
1E-13
1E-12
1E-11
1E-10
1E-09
1E-08
1E-07
1E-06
1E-05
1E-04
1E-03
1E-02
1E-01

CALCULATIONS

[November 1978 Data]

See the NOMENCLATURE section for a description of the symbols and units.

$AT1 = N(1)_5 N(1)_6 \,.\, N(1)_7 N(1)_8 N(1)_9 {}^{*}N(1)_{10}$

and

$N(1)_1$ Mode: 1 = Primary Sensor, 2 = Backup Sensor

$N(1)_2$ Resolution: 3 = $N(1)_7 \,.\, N(1)_8$, 4 = $N(1)_6 \,.\, N(1)_7$

$N(1)_3$ Interface Number: 1 = 1, 2 = 2, 3 = 3, 4 = 4

$N(1)_4$ Polarity: 1 = +, 2 = −

${}^{*}N(1)_{10}$ is rounded off to $N(1)_9$ when $N(1)_2 = 4$

$AT2 = N(2)_5 N(2)_6 \,.\, N(2)_7 N(2)_8 N(2)_9 {}^{*}N(2)_{10}$

and

$N(2)_1$ Mode: 1 = Primary Sensor, 2 = Backup Sensor.

$N(2)_2$ Resolution: 3 = $N(2)_7 \,.\, N(2)_8$, 4 = $N(2)_6 \,.\, N(2)_7$

$N(2)_3$ Interface Number: 1 = 1, 2 = 2, 3 = 3, 4 = 4

$N(2)_4$ Polarity: 1 = +, 2 = −

${}^{*}N(2)_{10}$ is rounded off to $N(2)_9$ when $N(2)_2 = 4$

If $V(05) \leqslant 2.570$ volt, then:
$WS1 = -6.32834 \times 10^{-2} + 2.42269 \times V(05) - 0.399002 \times V(05)^2 + 8.72726 \times 10^{-2} \times V(05)^3$

If $V(05) > 2.570$ volt, then:
$WS1 = 3.08914 \times 10^{-2} + 1.93793 \times V(05) - 6.72817 \times 10^{-4} \times V(05)^2$

If $V(06) \leqslant 2.558$ volt, then:
$WS2 = -7.13544 \times 10^{-2} + 2.52039 \times V(06) - 0.404911 \times V(06)^2 + 8.22668 \times 10^{-2} \times V(06)^3$

If $V(06) > 2.558$ volt, then:
$WS2 = 0.181091 + 1.92438 \times V(06) + 1.55926 \times 10^{-4} \times V(06)^2$

$V'(03) = V(03) + DPIFCAL$

$DP1 = -20.825 + 6.25047 \times V'(03) - 4.04968 \times 10^{-2} \times V'(03)^2 + 1.43719 \times 10^{-3} \times V'(03)^3$

$V'(04) = V(04) + DP2FCAL$

$DP2 = -20.5158 + 6.06103 \times V'(04) - 2.15130 \times 10^{-2} \times V'(04)^2 + 1.890459 \times 10^{-3} \times V'(04)^3$

If $|V(01)| > 1.0$ volt, then:

$$TUR1 = \left[1.07722 \times 10^{\left(1 - \frac{|V(01)|}{2}\right)}\right]^2$$

If $|V(01)| \leqslant 1.0$ volt, then:
$TUR1$ = "NO DATA"

If $|V(02)| > 1.0$ volt, then:

$$TUR2 = \left[1.07722 \times 10^{\left[1 - \frac{|V(02)|}{2}\right]}\right]^2$$

If $|V(02)| \leqslant 1.0$ volt, then:
$TUR2$ = "NO DATA"

If $V(09) < 6.324$ volt, then:
$WD = 145 + 34 \times V(09)$

If $V(09) \geqslant 6.324$ volt, then:
$WD = -215 + 34 \times V(09)$

$$BP = 941.51 + 14.123\ V(07) + 0.22644 \times V(07)^2 - 1.41907 \times 10^{-2} \times V(07)^3$$

$$SR = 139.46 \times V(08)$$

$$WTB = 10 + V(10)$$

$$Z1 = 18.450$$

$$Z2 = 6.258$$

$$ZB = 10.000$$

$$ZTUR1 = Z1 + 0.60$$

$$ZTUR2 = Z2 + 0.60$$

$$GMH = \sqrt{Z1 \times Z2}$$

$$ATK1 = AT1 + 273.160$$

$$ATK2 = AT2 + 273.160$$

$$DPK1 = DP1 + 273.160$$

$$DPK2 = DP2 + 273.160$$

$$A1 = 373.160/DPK1$$

$$A2 = 373.160/DPK2$$

$$B1 = A1 - 1.000$$

$$B2 = A2 - 1.000$$

$$C1 = 1.000 - \left(\frac{1}{A1}\right)$$

$$C2 = 1.000 - \left(\frac{1}{A2}\right)$$

$$GGC10 = -3.49149$$

$$GGC11 = 11.344$$

$$GGC12 = 5.02808$$

$$GGC13 = -7.90298$$

$$GGC14 = 8.1328 \times 10^{-3}$$

$$GGC15 = -1.3816 \times 10^{-7}$$

$$D1 = [10^{(GGC10) \times (B1)}] - 1.000$$

$$D2 = [10^{(GGC10) \times (B2)}] - 1.000$$

$$F1 = [10^{(GGC11)\times(C1)}] - 1.000$$

$$F2 = [10^{(GGC11)\times(C2)}] - 1.000$$

$$VP1 = 1013.246 \times (A1)^{GGC12} \times 10^{[GGC13\times B1]+[GGC14\times D1]+[GGC15\times F1]}$$

$$VP2 = 1013.246 \times (A2)^{GGC12} \times 10^{[GGC13\times B2]+[GGC14\times D2]+[GGC15\times F2]}$$

$$G1 = 373.160/ATK1$$

$$G2 = 373.160/ATK2$$

$$Q1 = G1 - 1.000$$

$$Q2 = G2 - 1.000$$

$$J1 = 1.000 - \left[\frac{1}{G1}\right]$$

$$J2 = 1.000 - \left[\frac{1}{G2}\right]$$

$$K1 = [10^{(GGC10)\times(Q1)}] - 1.000$$

$$K2 = [10^{(GGC10)\times(Q2)}] - 1.000$$

$$M1 = [10^{(GGC11)\times(J1)}] - 1.000$$

$$M2 = [10^{(GGC11)\times(J2)}] - 1.000$$

$$SVP1 = 1013.246 \times (G1)^{GGC12} \times 10^{[GGC13\times Q1]+[GGC14\times K1]+[GGC15\times M1]}$$

$$SVP2 = 1013.246 \times (G2)^{GGC12} \times 10^{[GGC13\times Q2]+[GGC14\times K2]+[GGC15\times M2]}$$

$$WVGC = 4.6150 \times 10^2$$

$$AH1 = (VP1) \times \left[\frac{100}{(WVGC)(ATK1)}\right]$$

$$AH2 = (VP2) \times \left[\frac{100}{(WVGC)(ATK2)}\right]$$

$$RH1 = \left[\frac{VP1}{SVP1}\right] \times 100$$

$$RH2 = \left[\frac{VP2}{SVP2}\right] \times 100$$

$$SH1 = \left[\frac{VP1}{BP}\right] \times 0.62197$$

$$SH2 = \left[\frac{VP2}{BP}\right] \times 0.62197$$

$$VTK1 = (ATK1) \times [1.000 + (SH1 \times 0.608)]$$

$$VTK2 = (ATK2) \times [1.000 + (SH2 \times 0.608)]$$

$$VT1 = VTK1 - 273.160$$

$$VT2 = VTK2 - 273.160$$

$$PTK1 = (ATK1) + (0.0098 \times Z1)$$

$$PTK2 = (ATK2) + (0.0098 \times Z2)$$

$$PT1 = PTK1 - 273.160$$

$$PT2 = PTK2 - 273.160$$

$$VPTK1 = (VTK1) + (0.0098 \times Z1)$$

$$VPTK2 = (VTK2) + (0.0098 \times Z2)$$

$$VPT1 = VPTK1 - 273.160$$

$$VPT2 = VPTK2 - 273.160$$

$$* \; DWSDZ = \frac{(WS1 - WS2) \times Ln\left(\frac{Z1}{Z2}\right)}{GMH}$$

*See ERRATA NOTE 3, page 60.

$$* \; DSHDZ = \frac{(SH1 - SH2) \times Ln\left(\frac{Z1}{Z2}\right)}{GMH}$$

$$* \; DPTDZ = \frac{(PTK1 - PTK2) \times Ln\left(\frac{Z1}{Z2}\right)}{GMH}$$

$$* \; DVPTDZ = \frac{(VPTK1 - VPTK2) \times Ln\left(\frac{Z1}{Z2}\right)}{GMH}$$

$$ATKM = \frac{ATK1 + ATK2}{2}$$

$$VPTKM = \frac{VPTK1 + VPTK2}{2}$$

$$GA = 9.7959$$

$$* \; RI = \frac{(GA) \times (DPTDZ)}{(VPTKM) \times [DWSDZ]^2}$$

If $RI \leqslant 0$, then compute ZOL as a function of RI solving the below equation in reverse via the Newton-Raphson Method for:

$$RI = [0.74(ZOL)] \times \frac{[1 - 15(ZOL)]^{1/2}}{[1 - 9(ZOL)]^{1/2}}$$

Let $J = RI$ as an arbitrary starting point and

$$ZOL^{J+1} = ZOL^{J} - \frac{F(ZOL^{J})}{F'(ZOL^{J})}$$

Where:

ZOL^{J} is the current guess.

ZOL^{J+1} is the next iteration.

and

$$F(ZOL) = \frac{.74(ZOL)[1 - 15(ZOL)]^{1/2}}{[1 - 9(ZOL)]^{1/2}} - RI$$

$$F'(ZOL) = \left[(.74)[1 - 15(ZOL)]^{1/2}\right] - \left[\frac{11.1(ZOL)}{[2-30(ZOL)]^{1/2}}\right] + \left[\frac{9(RI)}{[2-18(ZOL)]^{1/2}}\right]$$

Execute the iterations until:

$$\frac{|ZOL^{J+1} - ZOL^{J}|}{|ZOL^{J+1}|} < .0005$$

At which point an exceptable value for ZOL has been computed.

Then:

$$MOL = \frac{GMH}{ZOL}$$

$$Z1OL = \frac{Z1}{MOL}$$

$$Z2OL = \frac{Z2}{MOL}$$

$$W1 = [1 - 15(Z1OL)]^{1/4}$$

$$W2 = [1 - 15(Z2OL)]^{1/4}$$

$$Y1 = [1 - 9(Z1OL)]^{1/2}$$

$$Y2 = [1 - 9(Z2OL)]^{1/2}$$

With *arctan* expressed in radians:

$$PSI1Z1 = 2 \times Ln\left(\frac{1 + W1}{2}\right) + Ln\left(\frac{1 + (W1)^2}{2}\right) - [2\ arctan(W1)] + \frac{\pi}{2}$$

$$PSI1Z2 = 2 \times Ln\left(\frac{1 + W2}{2}\right) + Ln\left(\frac{1 + (W2)^2}{2}\right) - [2\ arctan(W2)] + \frac{\pi}{2}$$

$$PSI2Z1 = Ln\left(\frac{1 + Y1}{2}\right)$$

$$PSI2Z2 = Ln\left(\frac{1 + Y2}{2}\right)$$

If $RI > 0$, then compute ZOL as a function of RI solving the below equation in reverse via the Quadratic Solution for:

$$RI = \frac{0.74(ZOL) + 4.7(ZOL)^2}{[1 + 4.7(ZOL)]^2}$$

Let:

$$ZOL = \frac{-B - \sqrt{B^2 - 4(A \times C)}}{2(A)}$$

Where:

$A = (22.09 \times RI) - 4.7$

$B = (9.4 \times RI) - 0.74$

$C = RI$

Then:

$$MOL = \frac{GMH}{ZOL}$$

$$Z1OL = \frac{Z1}{MOL}$$

$$Z2OL = \frac{Z2}{MOL}$$

$PSI1Z1 = -4.7\,(Z1OL)$

$PSI1Z2 = -4.7\,(Z2OL)$

$$PSI2Z1 = \frac{-4.7(Z1OL)}{0.74}$$

$$PSI2Z2 = \frac{-4.7(Z2OL)}{0.74}$$

$$ZOLT = \frac{ZB}{MOL}$$

$VKC = 0.35$

If $(WS1 - WS2) = 0$, then set $(WS1 - WS2) = 0.001$

$$WSSLOP = \frac{[Ln(Z1) - PSI1Z1] - [Ln(Z2) - PSI1Z2]}{(WS1 - WS2)}$$

If $(SH1 - SH2) = 0$, then set $(SH1 - SH2) = 1 \times 10^{-7}$

$$SHSLOP = \frac{[Ln(Z1) - PSI2Z1] - [Ln(Z2) - PSI2Z2]}{(SH1 - SH2)}$$

If $(PTK1 - PTK2) = 0$, then set $(PTK1 - PTK2) = 0.0001$

$$PTKSLOP = \frac{[Ln(Z1) - PSI2Z1] - [Ln(Z2) - PSI2Z2]}{(PTK1 - PTK2)}$$

If $(VPTK1 - VPTK2) = 0$, then set $(VPTK1 - VPTK2) = 0.0001$

$$VPTKSLOP = \frac{[Ln(Z1) - PSI2Z1] - [Ln(Z2) - PSI2Z2]}{(VPTK1 - VPTK2)}$$

If $[Ln(TUR1) - Ln(TUR2)] = 0$, then set $[Ln(TUR1) - Ln(TUR2)]$

$= Ln(1 \times 10^{-5}) = -11.51292546$

$$TURSLOP = \frac{[Ln(ZTUR1) - Ln(ZTUR2)]}{[Ln(TUR1) - Ln(TUR2)]}$$

$$FRICV = \frac{VKC}{WSSLOP}$$

$$DRAG = \left[\frac{FRICV}{ZB}\right]^2$$

$$WSM = \frac{WS1 + WS2}{2}$$

$$RL = Ln(GMH) - \left[\frac{(WSM) \times (VKC)}{FRICV}\right]$$

If $RL < -227.95$, then:

$$RUFL = 1 \times 10^{-99}$$

If $RL \geqslant -227.95$, then:

$$RUFL = exp(RL)$$

$$SCLSH = \frac{VKC}{0.74(SHSLOP)}$$

$$SCLPT = \frac{VKC}{0.74(PTKSLOP)}$$

$$SCLVPT = \frac{VKC}{0.74(VPTKSLOP)}$$

$$VTKM = \frac{VTK1 + VTK2}{2}$$

$$AIRD = \frac{.34838(BP)}{VTKM}$$

$$SPHEAT = 0.240\left[1 + 0.90\left[\frac{SH1 + SH2}{2}\right]\right] \times 10^3$$

$$MOFLX = -(AIRD) \times (FRICV)^2$$

$$HUFLX = -(AIRD) \times (FRICV) \times (SCLSH)$$

$$HEFLX = -(AIRD) \times (FRICV) \times (SCLPT) \times [(SPHEAT) \times 4.18684]$$

$$ATM = ATKM - 273.160$$

$$LHV = \{597.31 - [.56525(ATM)]\} \times 10^3$$

$$BOYFLX = HELFX + [(HUFLX) \times (LHV) \times (4.18684)]$$

$$THFLX = BOYFLX - SR$$

$$LAMBDA = 5.4 \times 10^{-6}$$

$$OPTIR1 = \left[\frac{77.6(BP)}{(ATK1)^2}\right]^2 \times \left[1 + \frac{7.53 \times 10^9}{(LAMBDA)^2}\right]^2 \times (TUR1) \times 10^{-12}$$

$$OPTIR2 = \left[\frac{77.6(BP)}{(ATK2)^2}\right]^2 \times \left[1 + \frac{7.53 \times 10^9}{(LAMBDA)^2}\right]^2 \times (TUR2) \times 10^{-12}$$

$$WSB = WS1 - [.61195\ (WS1 - WS2)]$$

$$DPKB = DPK1 - [.53098(DPK1 - DPK2)]$$

$$ATKB = ATK1 - [.55743\ (ATK1 - ATK2)]$$

$$TRT = Ln\ (TUR1) - \left[.63082 \times Ln\left(\frac{TUR1}{TUR2}\right)\right]$$

$$TURT = exp(TRT)$$

$$DPB = DPKB - 273.160$$

$$ATB = ATKB - 273.160$$

$$AB = 373.160/DPKB$$

$$BB = AB - 1.000$$

$$CB = 1.000 - \left(\frac{1}{AB}\right)$$

$$DB = [10^{(GGC10)\times(BB)}] - 1.000$$

$$FB = [10^{(GGC11)\times(CB)}] - 1.000$$

$$VPB = 1013.246 \times (AB)^{GGC12} \times 10^{[GGC13\times BB]+[GGC14\times DB]+[GGC15\times FB]}$$

$$GB = 373.160/ATKB$$

$$QB = GB - 1.000$$

$$JB = 1.000 - \left(\frac{1}{GB}\right)$$

$$KB = [10^{(GGC10)\times(QB)}] - 1.000$$

$$MB = [10^{(GGC11)\times(JB)}] - 1.000$$

$$SVPB = 1013.246 \times (GB)^{GGC12} \times 10^{[GGC13\times QB]+[GGC14\times KB]+[GGC15\times MB]}$$

$$AHB = (VPB) \times \left[\frac{100}{(WVGC) \times (ATKB)}\right]$$

$$RHB = \left[\frac{VPB}{SVPB}\right] \times 100$$

$$SHB = \left[\frac{VPB}{BP}\right] \times 0.62197$$

$$VTKB = (ATKB) \times [1.000 + (SHB \times 0.608)]$$

$$VTB = VTKB - 273.160$$

$$PTKB = (ATKB) + [0.0098 \times ZB]$$

$$PTB = PTKB - 273.160$$

$$VPTKB = (VTKB) + [0.0098 \times ZB]$$

$$VPTB = VPTKB - 273.160$$

$$WTKB = WTB + 273.160$$

$$ATWTB = ATKB - WTKB$$

$$PTWTB = PTKB - WTKB$$

$$VTWTB = VTKB - WTKB$$

$$VPTWTB = VPTKB - WTKB$$

$$SHTC = 0.92 \times 10^{-3}$$

$$SPHEATB = 0.240[1 + 0.90\ (SHB)] \times 10^{3}$$

$$AIRDB = \frac{.34838(BP)}{VTKB}$$

$$VVPTC = 0.002 - [(SHTC) \times (WSB) \times (PTWTB)]$$

$$HEFLXB = (AIRDB) \times (VVPTC) \times [(SPHEATB) \times 4.18684]$$

$$AW = 373.160/WTKB$$

$$BW = AW - 1.000$$

$$CW = 1.000 - \left[\frac{1}{AW}\right]$$

$$DW = [10^{(GGC10)\times(BW)}] - 1.000$$

$$FW = [10^{(GGC11)\times(CW)}] - 1.000$$

$$VPW = 1013.246 \times (AW)^{GGC12} \times 10^{[GGC13\times BW]+[GGC14\times DW]+[GGC15\times FW]}$$

$$AHW = (VPW) \times \left[\frac{100}{(WVGC) \times (WTKB)}\right]$$

$$MTC = 1.32 \times 10^{-3}$$

$$VVHC = (MTC) \times (WSB) \times [AHW - AHB]$$

$$HUFLXB = VVHC$$

$$LHVB = \{597.31 - [.56525(ATB)]\} \times 10^{3}$$

$$BOYFLXB = HEFLXB + [(HUFLXB) \times (LHVB) \times (4.18684)]$$

$$THFLXB = BOYFLXB - SR$$

$$DRAGB = \{0.63 + [0.066(WSB)]\} \times 10^{-3}$$

$$RSTRES = (DRAGB) \times (WSB)^{2} \times (AIRDB)$$

$$VVLC = RSTRES/AIRDB$$

$$MOFLXB = -(RSTRES)$$

$$FRICVB = \sqrt{\left|\frac{(RSTRES)}{(AIRDB)}\right|}$$

$$RLB = Ln(ZB) - \frac{(WSB) \times (VKC)}{FRICVB}$$

If $RLB < -227.95$, then:

$$RUFLB = 1 \times 10^{-99}$$

If $RLB \geqslant -227.95$, then:

$$RUFLB = exp(RLB)$$

$$SCLSHB = \frac{-HUFLXB}{(AIRDB) \times (FRICVB)}$$

$$SCLPTB = \frac{-HEFLXB}{(AIRDB) \times (FRICVB) \times [4.18684(SPHEATB)]}$$

$$*SCLVPTB = \frac{-BOYFLXB}{(AIRDB) \times (FRICVB) \times [4.18684(SPHEATB)]}$$

*See ERRATA NOTE 2 on page 60.

$$MOLB = \frac{-(ATKB) \times [FRICVB]^3}{(GA) \times (VVPTC) \times (VKC)}$$

$$ZOLB = \frac{GMH}{MOLB}$$

If $ZOLB \leq 0$, then:

$$RIB = [0.74(ZOLB)] \times \frac{[1 - 15(ZOLB)]^{1/2}}{[1 - 9(ZOLB)]^{1/2}}$$

If $ZOLB > 0$, then:

$$RIB = \frac{(ZOLB) \times [0.74 + 4.7(ZOLB)]}{[1 + 4.7(ZOLB)]^2}$$

$$ZOLTB = \frac{ZB}{MOLB}$$

$$OPTIRT = \left[\frac{(77.6) \times (BP)}{(ATKB)^2}\right]^2 \times \left[1 + \frac{7.53 \times 10^9}{(LAMBDA)^2}\right]^2 \times (TURT) \times 10^{-12}$$

ERRATA NOTES

1. The Bulk Water Temperature reading of 15.667°C for Run Number 7811140800 is incorrect. It should have read 15.094°C.

2. The equation for "SCLVPTB" above is incorrect, since the definition for "BOYFLXB" had been redefined. The value presented for the bulk derived Scaling Virtual Potential Temperature is incorrect.

3. The general form of the approximation for the partial derivatives employed in computing the profile derived Richardson number stability were obtained from a key article by C. A. Paulson, "The Mathematical Representation of Wind Speed and Temperature Profiles in the Unstable Atmospheric Surface Layer," J. of Appl. Meteor., Vol. 9, pp. 857-861, Dec. 1970. The Paulson paper contains a typographical error in the equation for the partial derivative which was subsequently transcribed with the error into our calculations. The term $Ln\ (Z1/Z2)$, in our subscript notation, which appears in the numerator of the partial derivative equations, should have appeared in the denominator. The value of $Ln\ (Z1/Z2)$ is a constant equal to 1.0812037. The correct values for the various partial derivatives (DWSDZ, DSHDZ, DPTDZ, and DVPTDZ) may be obtained by multiplying the presented value by 0.85543. The correct value for the profile Richardson number (RI) may be obtained by multiplying the presented value by 1.1690. These corrections have little practical effect on the conclusions arrived at in this report.

NOMENCLATURE [November 1978 Data]

Symbol:	Units:	Description:
A	–	Variable in quadratic solution for profile derived Z/L (or ζ) stability parameter when Richardson's number > 0.
A1	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
A2	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
AB	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
AIRD	kg/m^3	Mean air density at the Z1 and Z2 heights.
AIRDB	kg/m^3	Air density at 10 meter height.
AH1	kg/m^3	Absolute humidity at the Z1 height.
AH2	kg/m^3	Absolute humidity at the Z2 height.
AHB	kg/m^3	Absolute humidity at the 10 meter height.
AHW	kg/m^3	Absolute humidity at water level.
arctan( )	radians	Arctangent of ( ).
AT1	°C	Air temperature in °C at the Z1 height.
AT2	°C	Air temperature in °C at the Z2 height.
ATB	°C	Air temperature in °C at the 10 meter height.
ATK1	°K	Air temperature in °K at the Z1 height.
ATK2	°K	Air temperature in °K at the Z2 height.
ATKB	°K	Air temperature in °K at the 10 meter height.
ATKM	°K	Mean air temperature in °K of the measurements at the Z1 and Z2 heights.
ATM	°C	Mean air temperature in °C of the measurements at the Z1 and Z2 heights.
ATWTB	°K	Air temperature at the 10 meter height minus the bulk water temperature.
AW	–	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
B	–	Variable in quadratic solution for profile derived Z/L (or ζ) stability parameter when Richardson's number > 0.

B1	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 meter height.
B2	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
BB	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
BOYFLX	watt/m^3	Profile derived sensible and latent heat flux. This is *not* buoyancy flux, for which the symbol was previously employed.
BOYFLXB	watt/m^3	Bulk aerodynamic derived sensible and latent heat flux. This is *not* buoyancy flux, for which the symbol was previously employed.
BP	mb	Mean barometric pressure at the Z1, Z2, and 10 meter heights.
BW	–	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
C	–	Variable in quadratic solution for profile derived Z/L (or ζ) stability parameter when Richardson's number > 0.
C1	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
C2	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
CB	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
CW	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the water level.
D1	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
D2	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
DB	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
DP1	°C	Dew point in °C at the Z1 height.
DP1FCAL	volt	Dew point field calibration correction at the Z1 height.
DP2	°C	Dew point in °C at the Z2 height.
DP2FCAL	volt	Dew point field calibration correction at the Z2 height.
DPB	°C	Dew point in °C at 10 meter height.

DPK1	°K	Dew point in °K at the Z1 height.
DPK2	°K	Dew point in °K at the Z2 height.
DPKB	°K	Dew point in °K at the 10 meter height.
DPTDZ	°K/m	Profile derived partial derivative of potential temperature with respect to height.
DRAG	–	Profile derived atmospheric drag coefficient at the 10 meter height.
DRAGB	–	Bulk aerodynamic derived atmospheric drag coefficient at the 10 meter height.
DSHDZ	kg/kg ·m	Profile derived partial derivative of specific humidity with respect to height.
DVPTDZ	°K/m	Profile derived partial derivative of virtual potential temperature with respect to height.
DW	–	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
DWSDZ	m/sec · m	Profile derived partial derivative of wind speed with respect to height.
exp( )	–	Exponent to base of natural logarithm e of ( ), e = 2.71828....
F	–	Variable in Newton-Raphson method solution for profile derived Z/L (or ζ) stability parameter when Richardson's number $\leqslant 0$.
F′	–	Variable in Newton-Raphson method solution for profile derived Z/L (or ζ) stability parameter when Richardson's number $\leqslant 0$.
F1	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
F2	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
FB	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
FRICV	m/sec	Profile derived friction (or scaling) velocity.
FRICVB	m/sec	Bulk aerodynamic derived friction (or scaling) velocity.
FW	–	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
G1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.

G2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
GA	m/sec^2	Gravitational acceleration constant; set equal to 9.7959 for the San Nicolas Island latitude.
GB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.
GGC10	–	Goff-Gratch formulation constant: -3.49149.
GGC11	–	Goff-Gratch formulation constant: 11.344.
GGC12	–	Goff-Gratch formulation constant: 5.02808.
GGC13	–	Goff-Gratch formulation constant: -7.90298.
GGC14	–	Goff-Gratch formulation constant: 8.1328×10^{-3}.
GGC15	–	Goff-Gratch formulation constant: -1.3816×10^{-7}.
GMH	meter	Geometric mean of heights Z1 and Z2. This is the equivalent to the mean measurement height as plotted on a *Ln* (height) vs. linear graph.
HEFLX	$watt/m^2$	Profile derived sensible heat flux.
HEFLXB	$watt/m^2$	Bulk aerodynamic derived sensible heat flux.
HUFLX	$kg/sec \cdot m^2$	Profile derived specific humidity flux.
HUFLXB	$kg/sec \cdot m^2$	Bulk aerodynamic derived specific humidity flux.
J	–	Variable in Newton-Raphson method solution for profile derived Z/L (or ζ) stability parameter when Richardson's number $\leqslant 0$.
J1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
J2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
JB	–	Intermediate step in Goff-Gratch formulation of saturated vapor at the 10 meter height.
K1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
K2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
KB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.

LAMBDA	meter	Wavelength employed for computing optical refractive index; set equal to 5.4×10^{-6}.
LHV	ITcal/kg	Profile derived latent heat of water vaporation.
LHVB	ITcal/kg	Bulk aerodynamic derived latent heat of water vaporation.
Ln ( )	–	Natural logarithm of ( ) with base e = 2.71828 ....
M1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
M2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
MB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.
MOFLX	Nt/m^2	Profile derived momentum flux.
MOFLXB	Nt/m^2	Bulk aerodynamic derived momentum flux.
MOL	meter	Profile derived Monin-Obukhov length.
MOLB	meter	Bulk aerodynamic derived Monin-Obukhov length.
MTC	–	Bulk aerodynamic moisture transfer coefficient; set equal to 1.32×10^{-3}.
$N(\ )_n$	–	Digital channel number ( ) consisting of 10 parallel digital characters, n = 1, 2, . . . 10.
OPTIR1	$°K/m^{-2/3}$	Optical refractive index parameter (C_n^2) at the ZTUR1 height.
OPTIR2	$°K/m^{-2/3}$	Optical refractive index parameter (C_n^2) at the ZTUR2 height.
OPTIRT	$°K/m^{-2/3}$	Optical refractive index parameter (C_n^2) at the 10 meter height.
PSI1Z1	–	Businger wind speed profile stability correction (Ψ_1) for the *Ln* (Z1) height.
PSI1Z2	–	Businger wind speed profile stability correction (Ψ_1) for the *Ln* (Z2) height.
PSI2Z1	–	Businger temperature and humidity stability correction (Ψ_2) for the *Ln* (Z1) height.
PSI2Z2	–	Businger temperature and humidity stability correction (Ψ_2) for the *Ln* (Z2) height.
PT1	°C	Potential temperature in °C at the Z1 height.

PT2	°C	Potential temperature in °C at the Z2 height.
PTB	°C	Potential temperature in °C at the 10 meter height.
PTK1	°K	Potential temperature in °K at the Z1 height.
PTK2	°K	Potential temperature in °K at the Z2 height.
PTKB	°K	Potential temperature in °K at the 10 meter height.
PTKSLOP	–	Profile derived physical slope of *Ln* (height) with Businger stability corrections vs. potential temperature.
PTWTB	°K	Potential temperature at the 10 meter height minus the bulk water temperature.
Q1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
Q2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
QB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.
RH1	%	Relative humidity at the Z1 height.
RH2	%	Relative humidity at the Z2 height.
RHB	%	Relative humidity at the 10 meter height.
RI	–	Profile derived gradient Richardson number stability.
RIB	–	Bulk aerodynamic derived gradient Richardson number stability.
RL	–	Intermediate step in computation of profile derived roughness length.
RLB	–	Intermediate step in computation of bulk aerodynamic derived roughness length.
RSTRESS	$kg/m \cdot sec^2$	Bulk aerodynamic derived Reynold's stress.
RUFL	meter	Profile derived roughness length.
RUFLB	meter	Bulk aerodynamic derived roughness length.
SCLPT	°K	Profile derived scaling potential temperature.
SCLPTB	°K	Bulk aerodynamic derived scaling potential temperature.
SCLSH	kg/kg	Profile derived scaling specific humidity.
SCLSHB	kg/kg	Bulk aerodynamic derived scaling specific humidity.

SCLVPT	°K	Profile derived scaling virtual potential temperature.
SCLVPTB	°K	Bulk aerodynamic derived scaling virtual potential temperature.
SH1	kg/kg	Specific humidity at the Z1 height.
SH2	kg/kg	Specific humidity at the Z2 height.
SHB	kg/kg	Specific humidity at the 10 meter height.
SHSLOP	—	Profile derived physical slope of *Ln* (height) with Businger stability corrections vs. specific humidity.
SHTC	—	Bulk aerodynamic sensible heat transfer coefficient; set equal to 0.92×10^{-3}.
SPHEAT	ITcal/kg °K	Profile derived specific heat of air.
SPHEATB	ITcal/kg °K	Bulk aerodynamic derived specific heat of air.
SR	watt/m^2	Sky and solar radiation flux.
SVP1	mb	Saturated vapor pressure at the Z1 height.
SVP2	mb	Saturated vapor pressure at the Z2 height.
SVPB	mb	Saturated vapor pressure at the 10 meter height.
THFLX	watt/m^2	Profile derived total heat budget flux.
THFLXB	watt/m^2	Bulk aerodynamic derived total heat budget flux.
TRT	—	Intermediate step in computing the microthermal turbulence temperature structure parameter (C_t^2) at the 10 meter height from profile C_t^2 measurements.
TTABLE	meter	Tide table referenced to mean sea level.
TUR1	°K/$m^{-2/3}$	Microthermal turbulence temperature structure parameter (C_t^2) at the ZTUR1 height.
TUR2	°K/$m^{-2/3}$	Microthermal turbulence temperature structure parameter (C_t^2) at the ZTUR2 height.
TURSLOP	—	Profile derived slope of *Ln* (height) vs. *Ln* (microthermal turbulence temperature structure parameter (C_t^2)).
TURT	°K/$m^{-2/3}$	Microthermal turbulence temperature structure parameter (C_t^2) at the 10 meters height.
V( )	volt	Average raw data voltage for analog channel number ( ).
V' ( )	volt	Field calibration corrected average data voltage for analog channel number ( ).

VKC	–	Von Kármán constant; set equal to 0.35.
VP1	mb	Vapor pressure at the Z1 height.
VP2	mb	Vapor pressure at the Z2 height.
VPB	mb	Vapor pressure at the 10 meter height.
VPT1	°C	Virtual potential temperature in °C at the Z1 height.
VPT2	°C	Virtual potential temperature in °C at the Z2 height.
VPTB	°C	Virtual potential temperature in °C at the 10 meter height.
VPTK1	°K	Virtual potential temperature in °K at the Z1 height.
VPTK2	°K	Virtual potential temperature in °K at the Z2 height.
VPTKB	°K	Virtual potential temperature in °K at the 10 meter height.
VPTKM	°K	Mean virtual potential temperature of the measurements at the Z1 and Z2 heights.
VPTKSLOP	–	Profile derived phsycial slope of *Ln* (height) with Businger stability corrections vs. virtual potential temperature.
VPTWTB	°K	Virtual potential temperature at the 10 meters height minus the bulk water temperature.
VPW	mb	Vapor pressure at water level.
VT1	°C	Virtual temperature in °C at the Z1 height.
VT2	°C	Virtual temperature in °C at the Z2 height.
VTB	°C	Virtual temperature in °C at the 10 meter height.
VTK1	°K	Virtual temperature in °K at the Z1 height.
VTK2	°K	Virtual temperature in °K at the Z2 height.
VTKB	°K	Virtual temperature in °K at the 10 meter height.
VTKM	°K	Mean virtual temperature of measurements at Z1 and Z2 heights.
VTWTB	°K	Virtual temperature at the 10 meter height minus the bulk water temperature.
VVHC	$m \cdot kg/sec \cdot m^3$	Bulk aerodynamic derived vertical velocity and absolute humidity covariance.
VVLC	m^2/sec^2	Bulk aerodynamic derived vertical velocity and longitudinal velocity covariance.

VVPTC	m °K/sec	Bulk aerodynamic derived vertical velocity and potential temperature covariance.
WD	degree	Wind direction referenced to true North.
WS1	m/sec	Wind speed at the Z1 height.
WS2	m/sec	Wind speed at the Z2 height.
WSB	m/sec	Wind speed at the 10 meter height.
WSM	m/sec	Mean wind speed of the measurements at the Z1 and Z2 heights.
WSSLOP	–	Profile derived physical slope of *Ln* (height) with Businger stability corrections vs. wind speed.
WTB	°C	Bulk water temperature in °C.
WTKB	°K	Bulk water temperature in °K.
WVGC	Nt · m/kg °K	Water vapor gas constant; set equal to 4.6150×10^2.
W1	–	Intermediate step in computation of the Businger stability correction for wind speed profile when Richardson number $\leqslant 0$ at the Z1 height.
W2	–	Intermediate step in computation of the Businger stability correction for wind speed profile when Richardson number $\leqslant 0$ at the Z2 height.
Y1	–	Intermediate step in computation of Businger stability correction for temperature and humidity profiles when Richardson number $\leqslant 0$ at the Z1 height.
Y2	–	Intermediate step in computation of Businger stability correction for temperature and humidity profiles when Richardson number $\leqslant 0$ at the Z2 height.
Z1	meter	Upper level average measurement height of profile instruments (except C_t^2) referenced to ground surface.
Z2	meter	Lower level average measurement height of profile instruments (except C_t^2) referenced to ground surface.
ZB	meter	This is the standard height for the bulk aerodynamic calculations; set equal to 10 meters and referenced to ground surface.
Z1OL	–	Profile derived Z/L (or ζ) stability parameter computed for the Z1 height.
Z2OL	–	Profile derived Z/L (or ζ) stability parameter computed for the Z2 height.
ZOL	–	Profile derived Z/L (or ζ) stability parameter computed for the geometric mean height which is the relevant height for the conversion of Richardson number to Z/L.

ZOLB	–	Bulk aerodynamic derived Z/L (or ζ) stability parameters computed for the geometric mean height.
ZOLT	–	Profile derived Z/L (or ζ) stability parameter computed for the 10 meter height.
ZOLTB	–	Bulk aerodynamic derived Z/L (or ζ) stability parameter computed for the 10 meter height.
ZTUR1	meter	Upper level measurement height of microthermal turbulence temperature structure (C_t^2) sensors referenced to the ground surface.
ZTUR2	meter	Lower level measurement height of microthermal turbulence temperature structure (C_t^2) sensors referenced to the ground surface.

REFERENCES

1. Blanc, T.V., "Micrometeorological Data for the 1978 Cooperative Experiment for West Coast Oceanography and Meteorology (CEWCOM-78) at San Nicolas Island, California," NRL Memo Report 3871 (1978).

2. Jensen, N.O., and Peterson, E.W., "On the Escarpment Wind Profile," Quart. J.R. Met. Soc., 104, pp. 719-728 (1978).

3. Friehe, C.A., and Pazan, S.E., "Performance of an Air-Sea Interaction Buoy," J. Appl. Met., 17, pp. 1488-1497 (1978).

4. Friehe, C.A., and Schmitt, K.F., "Parameterization of Air-Sea Interface Fluxes Sensible Heat and Moisture by Bulk Aerodynamic Formulas," J. Phy. Oceanogr., 6, pp. 801-809 (1976).

5. Panofsky, H.A., and Peterson, E.L., "Wind Profiles and Change of Terrain Roughness at Risø," Quart. J. R. Met. Soc., 98, pp. 845-854 (1972).

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811132135
START TIME: 21:35:10 PST
END TIME: 21:55: 0 PST
START DATE: 13 Nov 1978 (DAY 317)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.746	4.744	3.473	3.310	4.914	0.094	5.066

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.180	4.307	2.434	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135240	1421 136939

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	120	0	0	0	0	0	114.3	60.31

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.524	6.75	8.34	NO DATA	317.2	1014.7	1.31E 01	15.180	286.769

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.694	6.55	8.04	NO DATA	0.47

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.705	14.696	14.877	8.292E-03	70.82	6.725E-03	10.971	15.490	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.755	14.843	14.905	8.122E-03	68.65	6.591E-03	10.752	15.662	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811132135
PAGE: 2
START TIME: 21:35:10 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.419 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.457

Z/L AT 10 METERS
-0.425

Z/L AT Z1
-0.785

Z/L AT Z2
-0.266

MONIN-OBUKHOV LENGTH
(Meters)
-2.351E 01

PSI1 AT Z1= 0.965934
PSI1 AT Z2= 0.531187
PSI2 AT Z1= 0.652139
PSI2 AT Z2= 0.351573

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.46E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.09E-05

SEN. HEAT FLUX
(Watts/m2)
4.14E 00

TOTAL HEAT FLUX
(Watts/m2)
-3.58E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.092E-01

SCALING SPEC. HUMD.
(Kg/Kg)
8.109E-05

SCALING POT. TEMP.
(Kelvin)
-3.057E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.685E-02

ROUGHNESS LENGTH
(Meters)
5.881E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.192E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.03E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.35E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.08E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.80E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.21E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 5.83E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.55E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.81E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811132135
PAGE: 3
START TIME: 21:35:10 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.619	6.63	8.18	NO DATA		15.180	-1.561	-1.463	-0.401	-0.303
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.717	14.779	14.877	8.201E-03	69.64	6.653E-03	10.854	15.586	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.120 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.138

Z/L AT 10 METERS
-0.128

MONIN-OBUKHOV LENGTH (Meters)
-7.782E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.76E-02

HUMIDITY FLUX (Kg/sec m2)
4.16E-05

SEN. HEAT FLUX (Watts/m2)
1.36E 01

TOTAL HEAT FLUX (Watts/m2)
1.03E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.166E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.565E-04

SCALING POT. TEMP. (Kelvin)
-5.044E-02

SCALING V. POT. TEMP. (Kelvin)
-3.839E-01

ROUGHNESS LENGTH (Meters)
2.228E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.068E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.693E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.162E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.093E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.242

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.296E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811132200
START TIME: 22: 0:10 PST
END TIME: 22:29:50 PST
START DATE: 13 Nov 1978 (DAY 317)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.717	4.730	3.647	3.433	4.905	0.093	5.178

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.176	4.287	2.435	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135530	1421 137293

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	1	179	0	0	0	0	0	114.4	60.29

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.553	7.09	8.16	NO DATA	321.0	1014.6	1.29E 01	15.176	286.801

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.729	6.79	7.96	NO DATA	0.39

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.734	14.711	14.892	8.190E-03	69.83	6.644E-03	10.837	15.519	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.791	14.872	14.934	8.075E-03	68.10	6.554E-03	10.691	15.698	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811132200
PAGE: 2
START TIME: 22: 0:10 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) -0.215 AT GMH	MOMENTUM FLUX (Nt/m2) -2.47E-02	FRICTION VELOCITY (Meters/sec) 1.419E-01	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.75	HUMIDITY FLUX (Kg/sec m2) -8.74E-06	SCALING SPEC. HUMD. (Kg/Kg) 5.019E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.01E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE= 2.47E 00
Z/L AT GMH -0.240	SEN. HEAT FLUX (Watts/m2) 5.60E 00	SCALING POT. TEMP. (Kelvin) -3.182E-02	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 9.02E-06	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= 9.42E 03
Z/L AT 10 METERS -0.224	TOTAL HEAT FLUX (Watts/m2) -2.89E 01	SCALING V. POT. TEMP. (Kelvin) -2.347E-02	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.72E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE= -1.49E 01
Z/L AT Z1 -0.413	MISCELLANEOUS	ROUGHNESS LENGTH (Meters) 3.943E-07	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= -4.22E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE= -2.02E 01
Z/L AT Z2 -0.140	AIR DENSITY (Kg/m3) 1.227	DRAG COEF. AT 10 METERS (Dimensionless) 2.013E-04		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters) -4.471E 01	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.414E 02			
PSI1 AT Z1= 0.689229 PSI1 AT Z2= 0.345928 PSI2 AT Z1= 0.460972 PSI2 AT Z2= 0.224450	WATER LAT. HEAT VAP. (ITcal./Kg) 5.896E 05			

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811132200
PAGE: 3
START TIME: 22: 0:10 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.651	6.91	8.05	NO DATA		15.176	-1.525	-1.427	-0.375	-0.277
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.749	14.801	14.899	8.129E-03	68.89	6.596E-03	10.759	15.619	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.104 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.121

Z/L AT 10 METERS
-0.112

MONIN-OBUKHOV LENGTH (Meters)
-8.910E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.36E-02

HUMIDITY FLUX (Kg/sec m2)
4.40E-05

SEN. HEAT FLUX (Watts/m2)
1.37E 01

TOTAL HEAT FLUX (Watts/m2)
1.09E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.276E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.575E-04

SCALING POT. TEMP. (Kelvin)
-4.862E-02

SCALING V. POT. TEMP. (Kelvin)
-3.875E-01

ROUGHNESS LENGTH (Meters)
2.438E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.086E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.179E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.399E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
1.107E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.238

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.295E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811132230
START TIME: 22:30: 0 PST
END TIME: 22:59:50 PST
START DATE: 13 Nov 1978 (DAY 317)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.803	4.810	3.619	3.439	4.897	0.095	5.003

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.172	4.222	2.436	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135265	1421 137037

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.526	7.04	8.67	NO DATA	315.1	1014.4	1.33E 01	15.172	286.775

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.704	6.80	8.44	NO DATA	0.28

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.707	14.725	14.906	8.479E-03	72.41	6.878E-03	11.218	15.492	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.765	14.885	14.946	8.343E-03	70.47	6.772E-03	11.045	15.672	NO DATA

* CONTINUED ON PAGE 2

[illegible] 7911132230
[illegible] 2
START TIME 22 30 0 PST
START DATE 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

[illegible] CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD RICHARDSON NUMBER (+=Stable, -=Unstable) -0.355 AT GMH	MOMENTUM FLUX (Nt/m2) -1.85E-02	FRICTION VELOCITY (Meters/sec) 1.226E-01	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N' SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.75	HUMIDITY FLUX (Kg/sec m2) -9.50E-06	SCALING SPEC. HUMD. (Kg/Kg) 6.309E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.36E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE= 2.85E 00
Z/L AT GMH -0.389	SEN. HEAT FLUX (Watts/m2) 5.22E 00	SCALING POT. TEMP. (Kelvin) -3.431E-02	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.07E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= 7.50E 03
Z/L AT 10 METERS -0.362	TOTAL HEAT FLUX (Watts/m2) -3.15E 01	SCALING V. POT. TEMP. (Kelvin) -2.375E-02	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.81E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE= -1.38E 01
Z/L AT Z1 -0.668				
Z/L AT Z2 -0.227	MISCELLANEOUS	ROUGHNESS LENGTH (Meters) 2.862E-08	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= -4.02E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE= -1.99E 01
MONIN-OBUKHOV LENGTH (Meters) -2.761E 01	AIR DENSITY (Kg/m3) 1.227			
PSI1 AT Z1= 0.891920 PSI1 AT Z2= 0.479783 PSI2 AT Z1= 0.601162 PSI2 AT Z2= 0.316110	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.504E-04		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.896E 05			

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811132230
PAGE: 3
START TIME: 22:30: 0 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.625	6.89	8.54	NO DATA		15.172	-1.547	-1.449	-0.357	-0.259
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.723	14.815	14.913	8.406E-03	71.35	6.821E-03	11.125	15.592	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.106 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.123

Z/L AT 10 METERS
-0.114

MONIN-OBUKHOV LENGTH (Meters)
-8.749E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.32E-02

HUMIDITY FLUX (Kg/sec m2)
4.14E-05

SEN. HEAT FLUX (Watts/m2)
1.39E 01

TOTAL HEAT FLUX (Watts/m2)
1.03E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.270E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.484E-04

SCALING POT. TEMP. (Kelvin)
-4.928E-02

SCALING V. POT. TEMP. (Kelvin)
-3.645E-01

ROUGHNESS LENGTH (Meters)
2.427E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.085E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.154E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.135E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.119E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.233

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.295E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811132300
START TIME: 23: 0: 0 PST
END TIME: 23:29:50 PST
START DATE: 13 Nov 1978 (DAY 317)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.761	4.775	3.554	3.351	4.898	0.094	4.940

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.168	4.227	2.431	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135702	1421 137475

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.3	60.23

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.570	6.91	8.41	NO DATA	312.9	1014.5	1.31E 01	15.168	286.819

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.747	6.63	8.23	NO DATA	0.16

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.751	14.748	14.929	8.330E-03	70.95	6.759E-03	11.023	15.536	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.809	14.912	14.973	8.223E-03	69.28	6.675E-03	10.888	15.717	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811132300
PAGE: 2
START TIME: 23: 0: 0 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0. 254 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10. 75

Z/L AT GMH
-0. 282

Z/L AT 10 METERS
-0. 262

Z/L AT Z1
-0. 484

Z/L AT Z2
-0. 164

MONIN-OBUKHOV LENGTH
(Meters)
-3. 810E 01

PSI1 AT Z1= 0. 753193
PSI1 AT Z2= 0. 386988
PSI2 AT Z1= 0. 505274
PSI2 AT Z2= 0. 252428

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2. 26E-02

HUMIDITY FLUX
(Kg/sec m2)
-7. 90E-06

SEN. HEAT FLUX
(Watts/m2)
5. 56E 00

TOTAL HEAT FLUX
(Watts/m2)
-2. 71E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1. 227

AIR SPECIFIC HEAT
(ITcal. /Kg Kel.)
2. 415E 02

WATER LAT. HEAT VAP.
(ITcal. /Kg)
5. 89.E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1. 358E-01

SCALING SPEC. HUMD.
(Kg/Kg)
4. 740E-05

SCALING POT. TEMP.
(Kelvin)
-3. 301E-02

SCALING V. POT. TEMP.
(Kelvin)
-2. 516E-02

ROUGHNESS LENGTH
(Meters)
2. 840E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
1. 844E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2. 79E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 8. 35E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5. 82E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4. 43E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2. 58E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 9. 98E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1. 43E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1. 88E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811132300
PAGE: 3
START TIME: 23: 0: 0 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.669	6.74	8.31	NO DATA		15.168	-1.499	-1.401	-0.328	-0.230
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.767	14.840	14.938	8.273E-03	70.04	6.714E-03	10.951	15.637	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.110 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.127

Z/L AT 10 METERS
-0.118

MONIN-OBUKHOV LENGTH (Meters)
-8.444E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.99E-02

HUMIDITY FLUX (Kg/sec m2)
4.16E-05

SEN. HEAT FLUX (Watts/m2)
1.33E 01

TOTAL HEAT FLUX (Watts/m2)
1.03E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.209E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.534E-04

SCALING POT. TEMP. (Kelvin)
-4.837E-02

SCALING V. POT. TEMP. (Kelvin)
-3.750E-01

ROUGHNESS LENGTH (Meters)
2.310E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.075E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.882E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.159E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
1.069E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.229

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.295E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811132330
START TIME: 23:30: 0 PST
END TIME: 23:59:30 PST
START DATE: 13 Nov 1978 (DAY 317)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.680	4.702	3.812	3.624	4.903	0.090	4.965

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.164	4.236	2.429	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134991	1421 136762

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.24

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.499	7.41	7.92	NO DATA	313.8	1014.5	1.26E 01	15.164	286.748

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.676	7.16	7.79	NO DATA	0.02

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.680	14.639	14.819	8.061E-03	68.96	6.538E-03	10.665	15.465	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.738	14.806	14.867	7.984E-03	67.56	6.479E-03	10.568	15.644	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811132330
PAGE: 2
START TIME: 23:30: 0 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.308 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.340

Z/L AT 10 METERS
-0.316

Z/L AT Z1
-0.583

Z/L AT Z2
-0.198

MONIN-OBUKHOV LENGTH
(Meters)
-3.164E 01

PSI1 AT Z1= 0.831648
PSI1 AT Z2= 0.438870
PSI2 AT Z1= 0.559547
PSI2 AT Z2= 0.287968

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.01E-02

HUMIDITY FLUX
(Kg/sec m2)
-5.41E-06

SEN. HEAT FLUX
(Watts/m2)
5.34E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.06E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.278E-01

SCALING SPEC. HUMD.
(Kg/Kg)
3.448E-05

SCALING POT. TEMP.
(Kelvin)
-3.366E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.806E-02

ROUGHNESS LENGTH
(Meters)
2.351E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
1.634E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.53E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 5.94E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.80E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.83E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.74E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.37E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.40E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.69E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811132330
PAGE: 3
START TIME: 23:30: 0 PST
START DATE: 13 Nov 1978 (DAY 317)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.598	7.25	7.85	NO DATA		15.164	-1.566	-1.468	-0.432	-0.334
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.696	14.732	14.830	8.020E-03	68.19	6.507E-03	10.614	15.564	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.092 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.108

Z/L AT 10 METERS
-0.100

MONIN-OBUKHOV LENGTH (Meters)
-9.990E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.16E-02

HUMIDITY FLUX (Kg/sec m2)
4.72E-05

SEN. HEAT FLUX (Watts/m2)
1.46E 01

TOTAL HEAT FLUX (Watts/m2)
1.18E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.415E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.590E-04

SCALING POT. TEMP. (Kelvin)
-4.885E-02

SCALING V. POT. TEMP. (Kelvin)
-3.952E-01

ROUGHNESS LENGTH (Meters)
2.723E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.109E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.834E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.716E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.180E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.225

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.294E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140000
START TIME: 0: 0: 0 PST
END TIME: 0:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.725	4.745	4.275	4.015	4.902	0.093	4.980

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.160	4.236	2.428	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 132249	1421 134216

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.24

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.225	8.30	8.18	NO DATA	314.3	1014.5	1.30E 01	15.160	286.483

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.422	7.91	8.05	NO DATA	-0.11

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.406	14.384	14.565	8.213E-03	71.46	6.655E-03	10.855	15.190	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.483	14.571	14.632	8.132E-03	69.90	6.594E-03	10.756	15.387	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140000
PAGE: 2
START TIME: 0: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.168 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.190

Z/L AT 10 METERS
-0.177

Z/L AT Z1
-0.327

Z/L AT Z2
-0.111

MONIN-OBUKHOV LENGTH
(Meters)
-5.643E 01

PSI1 AT Z1= 0.602159
PSI1 AT Z2= 0.291981
PSI2 AT Z1= 0.400661
PSI2 AT Z2= 0.187952

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.94E-02

HUMIDITY FLUX
(Kg/sec m2)
-7.31E-06

SEN. HEAT FLUX
(Watts/m2)
9.34E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.17E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.898E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.790E-01

SCALING SPEC. HUMD.
(Kg/Kg)
3.326E-05

SCALING POT. TEMP.
(Kelvin)
-4.203E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.667E-02

ROUGHNESS LENGTH
(Meters)
1.398E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.203E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.97E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 6.14E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.77E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.78E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.96E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.42E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.13E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.29E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140000
PAGE: 3
START TIME: 0: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.335	8.06	8.11	NO DATA		15.160	-1.825	-1.727	-0.672	-0.574
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.433	14.488	14.586	8.170E-03	70.60	6.623E-03	10.802	15.300	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.077 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.092

Z/L AT 10 METERS
-0.085

MONIN-OBUKHOV LENGTH (Meters)
-1.171E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.28E-02

HUMIDITY FLUX (Kg/sec m2)
5.08E-05

SEN. HEAT FLUX (Watts/m2)
1.84E 01

TOTAL HEAT FLUX (Watts/m2)
1.31E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.749E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.504E-04

SCALING POT. TEMP. (Kelvin)
-5.389E-02

SCALING V. POT. TEMP. (Kelvin)
-3.831E-01

ROUGHNESS LENGTH (Meters)
3.477E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.162E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.555E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.079E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.481E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.898E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.220

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.294E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140030
START TIME: 0:30: 0 PST
END TIME: 0:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.662	4.683	4.190	3.927	4.900	0.092	5.090

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.156	4.223	2.428	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 130387	1421 132420

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.039	8.14	7.80	NO DATA	318.1	1014.5	1.28E 01	15.156	286.300

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.242	7.74	7.68	NO DATA	-0.22

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.219	14.167	14.348	8.008E-03	70.48	6.485E-03	10.577	15.007	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.303	14.362	14.423	7.935E-03	68.96	6.430E-03	10.488	15.207	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140030
PAGE: 2
START TIME: 0:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.180 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.203

Z/L AT 10 METERS
-0.189

Z/L AT Z1
-0.349

Z/L AT Z2
-0.118

MONIN-OBUKHOV LENGTH
(Meters)
-5.292E 01

PSI1 AT Z1= 0.625452
PSI1 AT Z2= 0.306183
PSI2 AT Z1= 0.416791
PSI2 AT Z2= 0.197528

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.10E-02

HUMIDITY FLUX
(Kg/sec m2)
-6.74E-06

SEN. HEAT FLUX
(Watts/m2)
1.04E 01

TOTAL HEAT FLUX
(Watts/m2)
-1.90E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.899E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.826E-01

SCALING SPEC. HUMD.
(Kg/Kg)
3.002E-05

SCALING POT. TEMP.
(Kelvin)
-4.603E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.125E-02

ROUGHNESS LENGTH
(Meters)
2.640E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.334E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.00E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 5.50E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.44E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.56E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.92E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.58E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.03E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.15E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140030
PAGE: 3
START TIME: 0:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.152	7.90	7.73	NO DATA	15.156	-2.004	-1.906	-0.880	-0.782

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	13.250	14.276	14.374	7.969E-03	69.65	6.455E-03	10.529	15.118	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.090 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.106

Z/L AT 10 METERS
-0.099

MONIN-OBUKHOV LENGTH (Meters)
-1.013E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.82E-02

HUMIDITY FLUX (Kg/sec m2)
5.18E-05

SEN. HEAT FLUX (Watts/m2)
1.97E 01

TOTAL HEAT FLUX (Watts/m2)
1.35E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.679E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.573E-04

SCALING POT. TEMP. (Kelvin)
-5.915E-02

SCALING V. POT. TEMP. (Kelvin)
-4.050E-01

ROUGHNESS LENGTH (Meters)
3.310E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.151E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.175E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.179E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.584E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.216

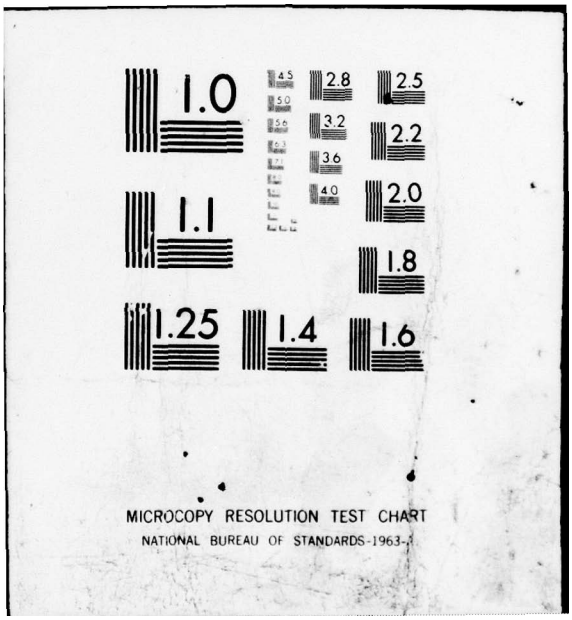
ABS. HUMID. AT WT LEVEL (Kg/m3)
1.294E-02

* END

AD-A074 826 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
MICROMETEOROLOGICAL DATA REPORT FOR THE NOVEMBER 1978 ELECTRO-O--ETC(U)
AUG 79 T V BLANC
UNCLASSIFIED NRL-MR-4056 SBIE-AD-E000 325 NL

2 OF 6
AD A074826




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140100
START TIME: 1: 0: 0 PST
END TIME: 1:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.631	4.644	3.902	3.678	4.893	0.091	5.466

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.152	4.227	2.429	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 129372	1421 131309

SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.23

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.937	7.58	7.61	NO DATA	330.8	1014.4	1.27E 01	15.152	286.194

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.131	7.26	7.45	NO DATA	-0.32

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.118	14.051	14.232	7.908E-03	70.04	6.402E-03	10.441	14.907	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.192	14.233	14.294	7.813E-03	68.38	6.330E-03	10.323	15.097	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140100
PAGE: 2
START TIME: 1: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.244 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.271

Z/L AT 10 METERS
-0.252

Z/L AT Z1
-0.466

Z/L AT Z2
-0.158

MONIN-OBUKHOV LENGTH
(Meters)
-3.963E 01

PSI1 AT Z1= 0.737138
PSI1 AT Z2= 0.376574
PSI2 AT Z1= 0.494157
PSI2 AT Z2= 0.245318

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.99E-02

HUMIDITY FLUX
(Kg/sec m2)
-7.86E-06

SEN. HEAT FLUX
(Watts/m2)
8.18E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.39E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.899E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.560E-01

SCALING SPEC. HUMD.
(Kg/Kg)
4.097E-05

SCALING POT. TEMP.
(Kelvin)
-4.217E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.547E-02

ROUGHNESS LENGTH
(Meters)
6.315E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.434E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.23E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 7.25E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.47E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.28E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.24E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.15E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.12E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.33E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140100
PAGE: 3
START TIME: 1: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.045	7.39	7.52	NO DATA		15.152	-2.107	-2.009	-0.999	-0.901
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.143	14.153	14.251	7.857E-03	69.13	6.364E-03	10.378	15.013	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.116 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.134

Z/L AT 10 METERS
-0.125

MONIN-OBUKHOV LENGTH (Meters)
-8.027E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.50E-02

HUMIDITY FLUX (Kg/sec m2)
4.95E-05

SEN. HEAT FLUX (Watts/m2)
1.95E 01

TOTAL HEAT FLUX (Watts/m2)
1.29E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.469E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.630E-04

SCALING POT. TEMP. (Kelvin)
-6.339E-02

SCALING V. POT. TEMP. (Kelvin)
-4.205E-01

ROUGHNESS LENGTH (Meters)
2.837E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.117E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.095E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.950E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.565E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.211

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.294E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140130
START TIME: 1:30: 0 PST
END TIME: 1:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.490	4.523	4.464	4.188	4.889	0.082	5.182

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.148	4.217	2.430	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 130010	1421 131976

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.001	8.67	6.76	NO DATA	321.2	1014.3	1.15E 01	15.148	286.259

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.198	8.24	6.72	NO DATA	-0.38

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.182	14.052	14.233	7.460E-03	65.81	6.041E-03	9.852	14.970	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.259	14.246	14.307	7.432E-03	64.77	6.023E-03	9.822	15.163	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140130
PAGE: 2
START TIME: 1:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0. 145 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10. 75

Z/L AT GMH
-0. 165

Z/L AT 10 METERS
-0. 154

Z/L AT Z1
-0. 283

Z/L AT Z2
-0. 096

MONIN-OBUKHOV LENGTH
(Meters).
-6. 509E 01

PSI1 AT Z1= 0. 552339
PSI1 AT Z2= 0. 262201
PSI2 AT Z1= 0. 366191
PSI2 AT Z2= 0. 167957

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4. 35E-02

HUMIDITY FLUX
(Kg/sec m2)
-2. 33E-06

SEN. HEAT FLUX
(Watts/m2)
9. 64E 00

TOTAL HEAT FLUX
(Watts/m2)
-7. 59E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1. 230

AIR SPECIFIC HEAT
(ITcal. /Kg Kel.)
2. 413E 02

WATER LAT. HEAT VAP.
(ITcal. /Kg)
5. 899E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1. 880E-01

SCALING SPEC. HUMD.
(Kg/Kg)
1. 008E-05

SCALING POT. TEMP.
(Kelvin)
-4. 128E-02

SCALING V. POT. TEMP.
(Kelvin)
-3. 991E-02

ROUGHNESS LENGTH
(Meters)
1. 567E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3. 535E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4. 28E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1. 89E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7. 75E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7. 50E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1. 86E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4. 69E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1. 15E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1. 19E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140130
PAGE: 3
START TIME: 1:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.111	8.41	6.74	NO DATA		15.148	-2.037	-1.939	-0.988	-0.890
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.209	14.160	14.258	7.445E-03	65.24	6.031E-03	9.836	15.077	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.076 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.090

Z/L AT 10 METERS
-0.084

MONIN-OBUKHOV LENGTH (Meters)
-1.191E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.03E-01

HUMIDITY FLUX (Kg/sec m2)
6.09E-05

SEN. HEAT FLUX (Watts/m2)
2.11E 01

TOTAL HEAT FLUX (Watts/m2)
1.60E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.895E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.711E-04

SCALING POT. TEMP. (Kelvin)
-5.874E-02

SCALING V. POT. TEMP. (Kelvin)
-4.451E-01

ROUGHNESS LENGTH (Meters)
3.840E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.185E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.378E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.090E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.700E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.207

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.293E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140200
START TIME: 2: 0: 0 PST
END TIME: 2:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.408	4.466	4.803	4.431	4.885	0.078	4.827

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.144	4.226	2.430	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 130062	1421 132041

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.3	60.23

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.006	9.32	6.27	NO DATA	309.1	1014.2	1.08E 01	15.144	286.265

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.204	8.71	6.38	NO DATA	-0.40

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.187	14.022	14.203	7.208E-03	63.57	5.838E-03	9.520	14.975	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.265	14.229	14.290	7.261E-03	63.26	5.885E-03	9.596	15.170	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140200
PAGE: 2
START TIME: 2: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.071 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.085

Z/L AT 10 METERS
-0.079

Z/L AT Z1
-0.145

Z/L AT Z2
-0.049

MONIN-OBUKHOV LENGTH
(Meters)
-1.271E 02

PSI1 AT Z1= 0.354987
PSI1 AT Z2= 0.153016
PSI2 AT Z1= 0.230610
PSI2 AT Z2= 0.095910

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.29E-02

HUMIDITY FLUX
(Kg/sec m2)
7.06E-06

SEN. HEAT FLUX
(Watts/m2)
1.19E 01

TOTAL HEAT FLUX
(Watts/m2)
1.85E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.899E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.435E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.357E-05

SCALING POT. TEMP.
(Kelvin)
-3.919E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.365E-02

ROUGHNESS LENGTH
(Meters)
2.519E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
5.928E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.15E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.75E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.89E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -8.79E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.44E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.01E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.21E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.08E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140200
PAGE: 3
START TIME: 2: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.117	8.95	6.33	NO DATA		15.144	-2.027	-1.929	-1.007	-0.909
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.215	14.137	14.235	7.236E-03	63.38	5.863E-03	9.560	15.083	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.063 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.075

Z/L AT 10 METERS
-0.070

MONIN-OBUKHOV LENGTH (Meters)
-1.427E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.20E-01

HUMIDITY FLUX (Kg/sec m2)
6.73E-05

SEN. HEAT FLUX (Watts/m2)
2.22E 01

TOTAL HEAT FLUX (Watts/m2)
1.77E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.127E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.749E-04

SCALING POT. TEMP. (Kelvin)
-5.720E-02

SCALING V. POT. TEMP. (Kelvin)
-4.569E-01

ROUGHNESS LENGTH (Meters)
4.460E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.221E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.776E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.725E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.789E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.202

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.293E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140230
START TIME: 2:30: 0 PST
END TIME: 2:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.302	4.365	4.731	4.457	4.879	0.075	4.624

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.140	4.213	2.428	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 129957	1421 131982

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.996	9.18	5.62	NO DATA	302.2	1014.2	1.04E 01	15.140	286.257

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.198	8.76	5.77	NO DATA	-0.38

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.177	13.967	14.148	6.896E-03	60.85	5.585E-03	9.106	14.965	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.259	14.181	14.242	6.962E-03	60.68	5.643E-03	9.201	15.164	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140230
PAGE: 2
START TIME: 2:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.157 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.178

Z/L AT 10 METERS
-0.166

Z/L AT Z1
-0.306

Z/L AT Z2
-0.104

MONIN-OBUKHOV LENGTH
(Meters)
-6.021E 01

PSI1 AT Z1= 0.579211
PSI1 AT Z2= 0.278161
PSI2 AT Z1= 0.384778
PSI2 AT Z2= 0.178658

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.44E-02

HUMIDITY FLUX
(Kg/sec m2)
7.33E-06

SEN. HEAT FLUX
(Watts/m2)
1.06E 01

TOTAL HEAT FLUX
(Watts/m2)
1.83E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.899E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.899E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.136E-05

SCALING POT. TEMP.
(Kelvin)
-4.485E-02

SCALING V. POT. TEMP.
(Kelvin)
-5.068E-02

ROUGHNESS LENGTH
(Meters)
7.053E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
3.606E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.26E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.84E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.35E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -9.43E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.84E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.51E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.05E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.33E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140230
PAGE: 3
START TIME: 2:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.109	8.93	5.70	NO DATA		15.140	-2.031	-1.933	-1.054	-0.956
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.207	14.086	14.184	6.931E-03	60.74	5.616E-03	9.157	15.075	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.063 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.076

Z/L AT 10 METERS
-0.071

MONIN-OBUKHOV LENGTH (Meters)
-1.414E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.19E-01

HUMIDITY FLUX (Kg/sec m2)
7.06E-05

SEN. HEAT FLUX (Watts/m2)
2.22E 01

TOTAL HEAT FLUX (Watts/m2)
1.86E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.117E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.843E-04

SCALING POT. TEMP. (Kelvin)
-5.736E-02

SCALING V. POT. TEMP. (Kelvin)
-4.811E-01

ROUGHNESS LENGTH (Meters)
4.432E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.219E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.713E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
7.064E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.788E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.198

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.293E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140300
START TIME: 3: 0: 0 PST
END TIME: 3:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6. 204	0. 000	0. 000	4. 197	4. 260	4. 586	4. 317	4. 878	0. 072	4. 602

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5. 136	4. 217	2. 428	0. 000	0. 000	0. 000	0. 000	6. 204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 129642	1421 131601

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114. 3	60. 22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12. 964	8. 90	4. 99	NO DATA	301. 5	1014. 1	1. 00E 01	15. 136	286. 222

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13. 160	8. 49	5. 15	NO DATA	-0. 31

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18. 45	13. 145	13. 894	14. 075	6. 599E-03	58. 35	5. 344E-03	8. 714	14. 934	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6. 26	13. 221	14. 101	14. 162	6. 667E-03	58. 24	5. 403E-03	8. 809	15. 126	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140300
PAGE: 2
START TIME: 3: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.153 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.174

Z/L AT 10 METERS
-0.162

Z/L AT Z1
-0.299

Z/L AT Z2
-0.101

MONIN-OBUKHOV LENGTH
(Meters)
-6.179E 01

PSI1 AT Z1= 0.570144
PSI1 AT Z2= 0.272749
PSI2 AT Z1= 0.378504
PSI2 AT Z2= 0.175025

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.16E-02

HUMIDITY FLUX
(Kg/sec m2)
7.11E-06

SEN. HEAT FLUX
(Watts/m2)
9.40E 00

TOTAL HEAT FLUX
(Watts/m2)
1.70E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.899E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.839E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.145E-05

SCALING POT. TEMP.
(Kelvin)
-4.115E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.696E-02

ROUGHNESS LENGTH
(Meters)
6.923E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
3.380E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.14E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.87E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.68E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -8.77E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.90E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.50E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.15E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.01E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140300
PAGE: 3
START TIME: 3: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.073	8.65	5.07	NO DATA		15.136	-2.063	-1.965	-1.127	-1.029
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.171	14.009	14.107	6.635E-03	58.27	5.375E-03	8.764	15.041	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.071 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.084

Z/L AT 10 METERS
-0.078

MONIN-OBUKHOV LENGTH (Meters)
-1.276E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.11E-01

HUMIDITY FLUX (Kg/sec m2)
7.18E-05

SEN. HEAT FLUX (Watts/m2)
2.19E 01

TOTAL HEAT FLUX (Watts/m2)
1.89E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.998E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.947E-04

SCALING POT. TEMP. (Kelvin)
-5.882E-02

SCALING V. POT. TEMP. (Kelvin)
-5.081E-01

ROUGHNESS LENGTH (Meters)
4.110E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.201E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.989E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
7.181E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.764E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.194

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.292E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140330
START TIME: 3:30: 0 PST
END TIME: 3:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.160	4.217	4.232	4.047	4.877	0.071	4.486

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.132	4.222	2.429	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 128987	1421 130923

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.899	8.22	4.76	NO DATA	297.5	1014.1	9.88E 00	15.132	286.156

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.092	7.97	4.89	NO DATA	-0.21

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.080	13.814	13.994	6.497E-03	57.68	5.260E-03	8.577	14.870	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.154	14.016	14.077	6.550E-03	57.46	5.307E-03	8.653	15.059	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140330
PAGE: 2
START TIME: 3:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.405 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.442

Z/L AT 10 METERS
-0.411

Z/L AT Z1
-0.758

Z/L AT Z2
-0.257

MONIN-OBUKHOV LENGTH
(Meters)
-2.433E 01

PSI1 AT Z1= 0.949950
PSI1 AT Z2= 0.519982
PSI2 AT Z1= 0.641143
PSI2 AT Z2= 0.343835

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.21E-02

HUMIDITY FLUX
(Kg/sec m2)
4.62E-06

SEN. HEAT FLUX
(Watts/m2)
7.44E 00

TOTAL HEAT FLUX
(Watts/m2)
8.97E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.339E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.803E-05

SCALING POT. TEMP.
(Kelvin)
-4.473E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.998E-02

ROUGHNESS LENGTH
(Meters)
6.931E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.793E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.51E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.68E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.46E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -8.34E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.61E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.69E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.06E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.46E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140330
PAGE: 3
START TIME: 3:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.007	8.07	4.83	NO DATA		15.132	-2.125	-2.027	-1.206	-1.108
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.105	13.926	14.024	6.525E-03	57.54	5.285E-03	8.617	14.975	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.090 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.105

Z/L AT 10 METERS
-0.098

MONIN-OBUKHOV LENGTH (Meters)
-1.019E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.31E-02

HUMIDITY FLUX (Kg/sec m2)
6.81E-05

SEN. HEAT FLUX (Watts/m2)
2.12E 01

TOTAL HEAT FLUX (Watts/m2)
1.80E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.751E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.012E-04

SCALING POT. TEMP. (Kelvin)
-6.197E-02

SCALING V. POT. TEMP. (Kelvin)
-5.252E-01

ROUGHNESS LENGTH (Meters)
3.482E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.163E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.568E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.811E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.705E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.189

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.292E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140400
START TIME: 4: 0: 0 PST
END TIME: 4:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.064	4.123	4.114	3.950	4.874	0.069	4.227

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.128	4.217	2.428	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 129000	1421 130955

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.900	7.99	4.18	NO DATA	288.7	1014.1	9.66E 00	15.128	286.158

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.095	7.79	4.33	NO DATA	-0.07

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.081	13.778	13.959	6.238E-03	55.38	5.051E-03	8.235	14.871	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.157	13.983	14.045	6.297E-03	55.23	5.102E-03	8.319	15.063	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140400
PAGE: 2
START TIME: 4: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.603 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.650

Z/L AT 10 METERS
-0.605

Z/L AT Z1
-1.117

Z/L AT Z2
-0.379

MONIN-OBUKHOV LENGTH
(Meters)
-1.652E 01

PSI1 AT Z1= 1.139668
PSI1 AT Z2= 0.656357
PSI2 AT Z1= 0.771114
PSI2 AT Z2= 0.438198

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.80E-02

HUMIDITY FLUX
(Kg/sec m2)
4.85E-06

SEN. HEAT FLUX
(Watts/m2)
7.21E 00

TOTAL HEAT FLUX
(Watts/m2)
9.53E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.209E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.258E-05

SCALING POT. TEMP.
(Kelvin)
-4.802E-02

SCALING V. POT. TEMP.
(Kelvin)
-5.407E-02

ROUGHNESS LENGTH
(Meters)
1.307E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.463E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.08E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.19E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.64E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -8.61E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.89E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.45E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -9.85E 00

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -8.75E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140400
PAGE: 3
START TIME: 4: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.009	7.87	4.26	NO DATA	15.128	-2.119	-2.021	-1.235	-1.137

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	13.107	13.893	13.991	6.269E-03	55.28	5.078E-03	8.279	14.978	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.097 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.113

Z/L AT 10 METERS
-0.105

MONIN-OBUKHOV LENGTH (Meters)
-9.518E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.75E-02

HUMIDITY FLUX (Kg/sec m2)
6.90E-05

SEN. HEAT FLUX (Watts/m2)
2.07E 01

TOTAL HEAT FLUX (Watts/m2)
1.81E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.666E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.103E-04

SCALING POT. TEMP. (Kelvin)
-6.235E-02

SCALING V. POT. TEMP. (Kelvin)
-5.478E-01

ROUGHNESS LENGTH (Meters)
3.281E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.149E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.110E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.902E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.663E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.185

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.292E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140430
START TIME: 4:30: 0 PST
END TIME: 4:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.119	4.173	3.443	3.300	4.886	0.069	4.471

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.124	4.214	2.428	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 128397	1421 130250

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.840	6.69	4.51	NO DATA	297.0	1014.3	9.69E 00	15.124	286.092

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.025	6.53	4.63	NO DATA	0.09

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.021	13.738	13.919	6.382E-03	56.87	5.165E-03	8.424	14.813	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.086	13.932	13.993	6.433E-03	56.67	5.210E-03	8.497	14.993	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140430
PAGE: 2
START TIME: 4:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.855 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.915

Z/L AT 10 METERS
-0.851

Z/L AT Z1
-1.571

Z/L AT Z2
-0.533

MONIN-OBUKHOV LENGTH
(Meters)
-1.175E 01

PSI1 AT Z1= 1.321061
PSI1 AT Z2= 0.792868
PSI2 AT Z1= 0.894122
PSI2 AT Z2= 0.532732

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.29E-02

HUMIDITY FLUX
(Kg/sec m2)
3.72E-06

SEN. HEAT FLUX
(Watts/m2)
5.49E 00

TOTAL HEAT FLUX
(Watts/m2)
4.99E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.022E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.957E-05

SCALING POT. TEMP.
(Kelvin)
-4.321E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.874E-02

ROUGHNESS LENGTH
(Meters)
1.559E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.044E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.62E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.53E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.62E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.46E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.43E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.60E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.09E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.70E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140430
PAGE: 3
START TIME: 4:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.943	6.60	4.57	NO DATA		15.124	-2.181	-2.083	-1.278	-1.180
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.041	13.846	13.944	6.409E-03	56.75	5.189E-03	8.462	14.913	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.167 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.189

Z/L AT 10 METERS
-0.176

MONIN-OBUKHOV LENGTH (Meters)
-5.688E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.71E-02

HUMIDITY FLUX (Kg/sec m2)
5.66E-05

SEN. HEAT FLUX (Watts/m2)
1.82E 01

TOTAL HEAT FLUX (Watts/m2)
1.48E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.153E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.137E-04

SCALING POT. TEMP. (Kelvin)
-6.800E-02

SCALING V. POT. TEMP. (Kelvin)
-5.546E-01

ROUGHNESS LENGTH (Meters)
2.203E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.065E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.635E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.663E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.464E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.180

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.291E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140500
START TIME: 5: 0: 0 PST
END TIME: 5:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.195	4.214	3.579	3.444	4.893	0.070	4.746

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.120	4.226	2.429	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411.128681	1421.130419

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.3	60.23

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.868	6.96	4.95	NO DATA		306.4	1014.4	9.80E 00	15.120	286.115
AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE				
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)				
13.042	6.81	4.87	NO DATA		0.27				

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.049	13.795	13.976	6.584E-03	58.57	5.329E-03	8.692	14.840	NO DATA
HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.103	13.964	14.025	6.544E-03	57.58	5.300E-03	8.643	15.010	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140500
PAGE: 2
START TIME: 5: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.829 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.887

Z/L AT 10 METERS
-0.826

Z/L AT Z1
-1.524

Z/L AT Z2
-0.517

MONIN-OBUKHOV LENGTH
(Meters)
-1.211E 01

PSI1 AT Z1= 1.304485
PSI1 AT Z2= 0.780173
PSI2 AT Z1= 0.882937
PSI2 AT Z2= 0.523949

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.08E-02

HUMIDITY FLUX
(Kg/sec m2)
-2.24E-06

SEN. HEAT FLUX
(Watts/m2)
4.14E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.12E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.361E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.944E-05

SCALING POT. TEMP.
(Kelvin)
-3.554E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.253E-02

ROUGHNESS LENGTH
(Meters)
7.127E-11

DRAG COEF. AT 10 METERS
(Dimensionless)
8.763E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.50E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.99E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.46E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.00E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.74E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 2.43E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.33E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.45E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140500
PAGE: 3
START TIME: 5: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.965	6.87	4.91	NO DATA		15.120	-2.155	-2.057	-1.231	-1.133
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.063	13.889	13.987	6.563E-03	58.03	5.314E-03	8.666	14.935	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.146 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.167

Z/L AT 10 METERS
-0.156

MONIN-OBUKHOV LENGTH (Meters)
-6.426E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.29E-02

HUMIDITY FLUX (Kg/sec m2)
5.75E-05

SEN. HEAT FLUX (Watts/m2)
1.86E 01

TOTAL HEAT FLUX (Watts/m2)
1.51E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.260E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.068E-04

SCALING POT. TEMP. (Kelvin)
-6.635E-02

SCALING V. POT. TEMP. (Kelvin)
-5.374E-01

ROUGHNESS LENGTH (Meters)
2.408E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.083E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.109E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.754E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.500E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.411E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.176

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.291E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140530
START TIME: 5:30: 0 PST
END TIME: 5:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.296	4.319	3.641	3.490	4.899	0.072	4.781

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.116	4.365	2.429	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 128940	1421 130789

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.36

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.894	7.08	5.55	NO DATA	307.5	1014.5	9.97E 00	15.116	286.146

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.079	6.90	5.50	NO DATA	0.45

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.075	13.860	14.041	6.864E-03	60.96	5.556E-03	9.062	14.865	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.140	14.042	14.104	6.835E-03	60.01	5.536E-03	9.029	15.046	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140530
PAGE: 2
START TIME: 5:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.705 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.757

Z/L AT 10 METERS
-0.705

Z/L AT Z1
-1.300

Z/L AT Z2
-0.441

MONIN-OBUKHOV LENGTH
(Meters)
-1.419E 01

PSI1 AT Z1= 1.218936
PSI1 AT Z2= 0.715342
PSI2 AT Z1= 0.825030
PSI2 AT Z2= 0.479061

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.42E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.71E-06

SEN. HEAT FLUX
(Watts/m2)
5.62E 00

TOTAL HEAT FLUX
(Watts/m2)
-8.57E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.075E-01

SCALING SPEC. HUMD.
(Kg/Kg)
1.292E-05

SCALING POT. TEMP.
(Kelvin)
-4.209E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.024E-02

ROUGHNESS LENGTH
(Meters)
1.397E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.155E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.78E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.02E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.58E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.29E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.26E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 3.66E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.12E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.18E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140530
PAGE: 3
START TIME: 5:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.997	6.97	5.53	NO DATA		15.116	-2.119	-2.021	-1.154	-1.056
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.095	13.962	14.060	6.849E-03	60.43	5.545E-03	9.045	14.966	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.138 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.158

Z/L AT 10 METERS
-0.147

MONIN-OBUKHOV LENGTH (Meters)
-6.796E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.52E-02

HUMIDITY FLUX (Kg/sec m2)
5.57E-05

SEN. HEAT FLUX (Watts/m2)
1.86E 01

TOTAL HEAT FLUX (Watts/m2)
1.46E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.301E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.968E-04

SCALING POT. TEMP. (Kelvin)
-6.501E-02

SCALING V. POT. TEMP. (Kelvin)
-5.115E-01

ROUGHNESS LENGTH (Meters)
2.488E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.090E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.293E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.573E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.496E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.172

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.291E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140600
START TIME: 6: 0: 0 PST
END TIME: 6:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.343	4.378	4.009	3.774	4.910	0.080	5.008

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.112	4.154	2.430	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 129112	1421 131126

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.15

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.911	7.79	5.83	NO DATA	315.3	1014.6	1.11E 01	15.112	286.172

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.113	7.45	5.85	NO DATA	0.62

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.092	13.896	14.077	6.996E-03	62.06	5.662E-03	9.236	14.882	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.174	14.100	14.161	7.003E-03	61.36	5.672E-03	9.252	15.079	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140600
PAGE: 2
START TIME: 6: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.233 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.260

Z/L AT 10 METERS
-0.242

Z/L AT Z1
-0.447

Z/L AT Z2
-0.152

MONIN-OBUKHOV LENGTH
(Meters)
-4.127E 01

PSI1 AT Z1= 0.720808
PSI1 AT Z2= 0.366054
PSI2 AT Z1= 0.482847
PSI2 AT Z2= 0.238146

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.40E-02

HUMIDITY FLUX
(Kg/sec m2)
1.15E-06

SEN. HEAT FLUX
(Watts/m2)
9.57E 00

TOTAL HEAT FLUX
(Watts/m2)
1.31E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.661E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-5.604E-06

SCALING POT. TEMP.
(Kelvin)
-4.632E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.768E-02

ROUGHNESS LENGTH
(Meters)
1.152E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2.760E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.47E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -9.97E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.24E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -8.49E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.11E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -8.44E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.02E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.92E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140600
PAGE: 3
START TIME: 6: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.023	7.58	5.84	NO DATA		15.112	-2.089	-1.991	-1.102	-1.004
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.121	14.010	14.108	7.000E-03	61.67	5.667E-03	9.245	14.992	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.106 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.124

Z/L AT 10 METERS
-0.115

MONIN-OBUKHOV LENGTH (Meters)
-8.695E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.99E-02

HUMIDITY FLUX (Kg/sec m2)
5.91E-05

SEN. HEAT FLUX (Watts/m2)
1.97E 01

TOTAL HEAT FLUX (Watts/m2)
1.55E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.548E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.883E-04

SCALING POT. TEMP. (Kelvin)
-6.232E-02

SCALING V. POT. TEMP. (Kelvin)
-4.879E-01

ROUGHNESS LENGTH (Meters)
3.010E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.130E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.492E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.907E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.588E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.167

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.290E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140630
START TIME: 6:30: 0 PST
END TIME: 6:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.450	4.478	4.657	4.355	4.922	0.208	5.294

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.108	4.162	2.431	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 127262	1421 129356

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.16

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)		WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.726	9.04	6.47	NO DATA		325.0	1014.8	2.89E 01	15.108	285.991
AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)		TIDE TABLE (Meter MSL)				
12.936	8.57	6.45	NO DATA		0.77				

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	12.907	13.754	13.935	7.315E-03	65.64	5.915E-03	9.652	14.703	NO DATA
HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	12.997	13.964	14.025	7.304E-03	64.70	5.911E-03	9.644	14.906	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140630
PAGE: 2
START TIME: 6:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.135 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.154

Z/L AT 10 METERS
-0.144

Z/L AT Z1
-0.265

Z/L AT Z2
-0.090

MONIN-OBUKHOV LENGTH
(Meters)
-6.955E 01

PSI1 AT Z1= 0.530120
PSI1 AT Z2= 0.249189
PSI2 AT Z1= 0.350836
PSI2 AT Z2= 0.159261

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.34E-02

HUMIDITY FLUX
(Kg/sec m2)
-6.26E-07

SEN. HEAT FLUX
(Watts/m2)
1.24E 01

TOTAL HEAT FLUX
(Watts/m2)
-1.81E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.901E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.081E-01

SCALING SPEC. HUMD.
(Kg/Kg)
2.441E-06

SCALING POT. TEMP.
(Kelvin)
-4.784E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.781E-02

ROUGHNESS LENGTH
(Meters)
3.998E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
4.332E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.79E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 4.62E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -9.05E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -9.05E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.68E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.94E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -9.89E 00

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.89E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140630
PAGE: 3
START TIME: 6:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.843	8.75	6.46	NO DATA		15.108	-2.265	-2.167	-1.237	-1.139
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	12.941	13.871	13.969	7.309E-03	65.12	5.913E-03	9.648	14.816	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.075 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.089

Z/L AT 10 METERS
-0.083

MONIN-OBUKHOV LENGTH (Meters)
-1.206E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.14E-01

HUMIDITY FLUX (Kg/sec m2)
6.46E-05

SEN. HEAT FLUX (Watts/m2)
2.42E 01

TOTAL HEAT FLUX (Watts/m2)
1.55E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.040E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.724E-04

SCALING POT. TEMP. (Kelvin)
-6.395E-02

SCALING V. POT. TEMP. (Kelvin)
-4.092E-01

ROUGHNESS LENGTH (Meters)
4.224E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.207E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.244E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.458E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.944E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.901E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.163

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.290E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140700
START TIME: 7: 0: 0 PST
END TIME: 7:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.465	4.507	4.891	4.556	4.944	0.457	4.974

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.104	4.212	2.431	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 127888	1421 130082

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.789	9.49	6.55	NO DATA	314.1	1015.1	6.38E 01	15.104	286.059

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.008	8.95	6.62	NO DATA	0.90

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	12.970	13.823	14.004	7.357E-03	65.76	5.948E-03	9.708	14.763	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.070	14.048	14.110	7.389E-03	65.15	5.979E-03	9.758	14.977	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140700
PAGE: 2
START TIME: 7: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.116 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.134

Z/L AT 10 METERS
-0.125

Z/L AT Z1
-0.230

Z/L AT Z2
-0.078

MONIN-OBUKHOV LENGTH
(Meters)
-8.027E 01

PSI1 AT Z1= 0.484102
PSI1 AT Z2= 0.222794
PSI2 AT Z1= 0.319086
PSI2 AT Z2= 0.141703

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.57E-02

HUMIDITY FLUX
(Kg/sec m2)
4.55E-06

SEN. HEAT FLUX
(Watts/m2)
1.50E 01

TOTAL HEAT FLUX
(Watts/m2)
-3.75E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.310E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.598E-05

SCALING POT. TEMP.
(Kelvin)
-5.231E-02

SCALING V. POT. TEMP.
(Kelvin)
-5.551E-02

ROUGHNESS LENGTH
(Meters)
9.171E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
5.336E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.44E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -3.07E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.01E-02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.07E-02

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.52E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.96E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -9.04E 00

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -8.52E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140700
PAGE: 3
START TIME: 7: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.911	9.16	6.59	NO DATA		15.104	-2.193	-2.095	-1.156	-1.058
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.009	13.948	14.046	7.373E-03	65.41	5.964E-03	9.735	14.882	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.063 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.076

Z/L AT 10 METERS
-0.071

MONIN-OBUKHOV LENGTH (Meters)
-1.416E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.28E-01

HUMIDITY FLUX (Kg/sec m2)
6.68E-05

SEN. HEAT FLUX (Watts/m2)
2.45E 01

TOTAL HEAT FLUX (Watts/m2)
1.26E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.219E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.685E-04

SCALING POT. TEMP. (Kelvin)
-6.106E-02

SCALING V. POT. TEMP. (Kelvin)
-3.138E-01

ROUGHNESS LENGTH (Meters)
4.722E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.235E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.036E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.681E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.966E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.158

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.290E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140730
START TIME: 7:30: 0 PST
END TIME: 7:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.491	4.514	4.795	4.509	4.967	0.901	4.869

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.100	4.210	2.432	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 128268	1421 130246

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.827	9.31	6.70	NO DATA	310.5	1015.5	1.26E 02	15.100	286.086

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.025	8.86	6.67	NO DATA	0.98

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.008	13.871	14.052	7.430E-03	66.26	6.006E-03	9.806	14.800	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.086	14.068	14.129	7.410E-03	65.28	5.994E-03	9.787	14.993	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140730
PAGE: 2
START TIME: 7:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.134 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.153

Z/L AT 10 METERS
-0.143

Z/L AT Z1
-0.263

Z/L AT Z2
-0.089

MONIN-OBUKHOV LENGTH
(Meters)
-7.004E 01

PSI1 AT Z1= 0.527811
PSI1 AT Z2= 0.247847
PSI2 AT Z1= 0.349241
PSI2 AT Z2= 0.158365

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.67E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.47E-06

SEN. HEAT FLUX
(Watts/m2)
1.01E 01

TOTAL HEAT FLUX
(Watts/m2)
-1.19E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.947E-01

SCALING SPEC. HUMD.
(Kg/Kg)
6.132E-06

SCALING POT. TEMP.
(Kelvin)
-4.164E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.096E-02

ROUGHNESS LENGTH
(Meters)
8.679E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
3.791E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.48E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.16E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.89E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.76E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.80E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 7.71E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.14E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.15E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140730
PAGE: 3
START TIME: 7:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.937	9.04	6.68	NO DATA		15.100	-2.163	-2.065	-1.119	-1.021
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.035	13.981	14.079	7.419E-03	65.71	6.000E-03	9.796	14.907	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.065 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.078

Z/L AT 10 METERS
-0.073

MONIN-OBUKHOV LENGTH (Meters)
-1.379E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.23E-01

HUMIDITY FLUX (Kg/sec m2)
6.53E-05

SEN. HEAT FLUX (Watts/m2)
2.39E 01

TOTAL HEAT FLUX (Watts/m2)
5.96E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.164E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.675E-04

SCALING POT. TEMP. (Kelvin)
-6.057E-02

SCALING V. POT. TEMP. (Kelvin)
-1.513E-01

ROUGHNESS LENGTH (Meters)
4.564E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.226E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.001E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.530E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.916E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.154

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.289E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140800
START TIME: 8: 0: 0 PST
END TIME: 8:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.527	4.552	4.657	4.368	4.986	1.144	4.782

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.667	4.251	2.437	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 128438	1421 130554

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.4	60.25

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.844	9.04	6.91	NO DATA	307.6	1015.8	1.60E 02	15.667	286.110

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.055	8.59	6.89	NO DATA	1.03

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.025	13.903	14.084	7.539E-03	67.16	6.093E-03	9.950	14.817	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.117	14.114	14.176	7.524E-03	66.16	6.086E-03	9.939	15.023	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140800
PAGE: 2
START TIME: 8: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.154 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.175

Z/L AT 10 METERS
-0.163

Z/L AT Z1
-0.300

Z/L AT Z2
-0.102

MONIN-OBUKHOV LENGTH
(Meters)
-6.141E 01

PSI1 AT Z1= 0.572300
PSI1 AT Z2= 0.274033
PSI2 AT Z1= 0.379996
PSI2 AT Z2= 0.175887

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.00E-02

HUMIDITY FLUX
(Kg/sec m2)
-9.36E-07

SEN. HEAT FLUX
(Watts/m2)
1.24E 01

TOTAL HEAT FLUX
(Watts/m2)
-1.49E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.014E-01

SCALING SPEC. HUMD.
(Kg/Kg)
3.769E-06

SCALING POT. TEMP.
(Kelvin)
-4.964E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.941E-02

ROUGHNESS LENGTH
(Meters)
2.391E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
4.057E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.53E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 7.03E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -9.26E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -9.22E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.74E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.25E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -9.53E 00

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.57E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140800
PAGE: 3
START TIME: 8: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.962	8.77	6.90	NO DATA		15.667	-2.705	-2.607	-1.646	-1.548
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.060	14.021	14.119	7.531E-03	66.60	6.089E-03	9.944	14.931	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.089 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.105

Z/L AT 10 METERS
-0.098

MONIN-OBUKHOV LENGTH (Meters)
-1.025E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.14E-01

HUMIDITY FLUX (Kg/sec m2)
6.73E-05

SEN. HEAT FLUX (Watts/m2)
2.87E 01

TOTAL HEAT FLUX (Watts/m2)
3.53E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.047E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.792E-04

SCALING POT. TEMP. (Kelvin)
-7.556E-02

SCALING V. POT. TEMP. (Kelvin)
-9.316E-02

ROUGHNESS LENGTH (Meters)
4.242E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.209E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.285E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.729E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
2.303E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.790

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.335E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811140930
START TIME: 9:30: 0 PST
END TIME: 9:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.558	4.571	4.747	4.462	5.018	0.797	4.899

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.078	4.197	2.442	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 128072	1421 130120

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.4	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.807	9.21	7.13	NO DATA		311.6	1016.3	1.11E 02	15.078	286.070

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)
13.012	8.77	7.01	NO DATA		0.88

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	12.988	13.882	14.063	7.654E-03	68.34	6.182E-03	10.101	14.781	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.073	14.079	14.140	7.585E-03	66.87	6.130E-03	10.017	14.980	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811140930
PAGE: 2
START TIME: 9:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.146 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.167

Z/L AT 10 METERS
-0.155

Z/L AT Z1
-0.287

Z/L AT Z2
-0.097

MONIN-OBUKHOV LENGTH
(Meters)
-6.437E 01

PSI1 AT Z1= 0.556099
PSI1 AT Z2= 0.264419
PSI2 AT Z1= 0.368791
PSI2 AT Z2= 0.169442

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.79E-02

HUMIDITY FLUX
(Kg/sec m2)
-6.69E-06

SEN. HEAT FLUX
(Watts/m2)
1.12E 01

TOTAL HEAT FLUX
(Watts/m2)
-1.16E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.233

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.971E-01

SCALING SPEC. HUMD.
(Kg/Kg)
2.755E-05

SCALING POT. TEMP.
(Kelvin)
-4.574E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.136E-02

ROUGHNESS LENGTH
(Meters)
1.248E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.885E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.47E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 5.17E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.58E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.76E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.78E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.72E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.03E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.14E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811140930
PAGE: 3
START TIME: 9:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.921	8.94	7.06	NO DATA		15.078	-2.157	-2.059	-1.086	-0.988
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.019	13.992	14.090	7.617E-03	67.53	6.154E-03	10.056	14.892	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.067 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.080

Z/L AT 10 METERS
-0.074

MONIN-OBUKHOV LENGTH (Meters)
-1.343E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.20E-01

HUMIDITY FLUX (Kg/sec m2)
6.21E-05

SEN. HEAT FLUX (Watts/m2)
2.36E 01

TOTAL HEAT FLUX (Watts/m2)
6.58E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.124E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.612E-04

SCALING POT. TEMP. (Kelvin)
-6.062E-02

SCALING V. POT. TEMP. (Kelvin)
-1.691E-01

ROUGHNESS LENGTH (Meters)
4.452E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.220E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.759E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.210E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.894E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.130

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.288E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141000
START TIME: 10: 0: 0 PST
END TIME: 10:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.540	4.558	4.393	4.148	5.018	1.878	4.769

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.156	4.192	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 128927	1421 130817

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
12.893	8.53	7.03	NO DATA	307.2	1016.3	2.62E 02	15.156	286.147

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.082	8.17	6.93	NO DATA	0.74

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.074	13.961	14.142	7.602E-03	67.52	6.142E-03	10.036	14.864	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.143	14.143	14.204	7.544E-03	66.22	6.099E-03	9.965	15.049	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141000
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START TIME: 10: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.176 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.199

Z/L AT 10 METERS
-0.186

Z/L AT Z1
-0.343

Z/L AT Z2
-0.116

MONIN-OBUKHOV LENGTH
(Meters)
-5.387E 01

PSI1 AT Z1= 0.618950
PSI1 AT Z2= 0.302201
PSI2 AT Z1= 0.412287
PSI2 AT Z2= 0.194840

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.45E-02

HUMIDITY FLUX
(Kg/sec m2)
-4.89E-06

SEN. HEAT FLUX
(Watts/m2)
7.93E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.66E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.233

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.900E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.673E-01

SCALING SPEC. HUMD.
(Kg/Kg)
2.371E-05

SCALING POT. TEMP.
(Kelvin)
-3.807E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.433E-02

ROUGHNESS LENGTH
(Meters)
2.792E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.799E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.68E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 4.36E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.00E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.31E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.09E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 2.00E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.24E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.38E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141000
PAGE: 3
START TIME: 10: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
12.998	8.31	6.98	NO DATA		15.156	-2.158	-2.060	-1.093	-0.995
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.096	14.063	14.161	7.571E-03	66.80	6.119E-03	9.998	14.967	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.084 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.099

Z/L AT 10 METERS
-0.092

MONIN-OBUKHOV LENGTH (Meters)
-1.091E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.00E-01

HUMIDITY FLUX (Kg/sec m2)
5.89E-05

SEN. HEAT FLUX (Watts/m2)
2.21E 01

TOTAL HEAT FLUX (Watts/m2)
-9.44E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.852E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.674E-04

SCALING POT. TEMP. (Kelvin)
-6.222E-02

SCALING V. POT. TEMP. (Kelvin)
2.657E-01

ROUGHNESS LENGTH (Meters)
3.731E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.178E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.131E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.886E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.774E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.900E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.216

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.294E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141030
START TIME: 10:30: 0 PST
END TIME: 10:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.537	4.554	4.411	4.185	5.002	3.886	4.488

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.233	4.312	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 130780	1421 132212

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.31

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.078	8.57	7.03	NO DATA	297.6	1016.0	5.42E 02	15.233	286.310

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.221	8.24	6.90	NO DATA	0.56

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.259	14.147	14.327	7.594E-03	66.67	6.141E-03	10.031	15.045	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.283	14.282	14.343	7.527E-03	65.50	6.089E-03	9.948	15.187	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141030
PAGE: 2
START TIME: 10:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.075 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.089

Z/L AT 10 METERS
-0.083

Z/L AT Z1
-0.153

Z/L AT Z2
-0.052

MONIN-OBUKHOV LENGTH
(Meters)
-1.204E'02

PSI1 AT Z1= 0.368774
PSI1 AT Z2= 0.160148
PSI2 AT Z1= 0.239999
PSI2 AT Z2= 0.100544

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.12E-02

HUMIDITY FLUX
(Kg/sec m2)
-4.16E-06

SEN. HEAT FLUX
(Watts/m2)
1.95E 00

TOTAL HEAT FLUX
(Watts/m2)
-5.50E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.899E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.312E-01

SCALING SPEC. HUMD.
(Kg/Kg)
2.571E-05

SCALING POT. TEMP.
(Kelvin)
-1.194E-02

SCALING V. POT. TEMP.
(Kelvin)
-7.736E-03

ROUGHNESS LENGTH
(Meters)
1.995E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.722E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.29E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 5.15E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.39E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.55E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.67E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.84E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.96E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -6.11E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

RUN NUMBER: 7811141030
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START TIME: 10:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.158	8.36	6.96	NO DATA		15.233	-2.075	-1.977	-1.011	-0.913
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.256	14.222	14.320	7.558E-03	66.03	6.113E-03	9.987	15.124	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.079 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.093

Z/L AT 10 METERS
-0.087

MONIN-OBUKHOV LENGTH (Meters)
-1.154E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.02E-01

HUMIDITY FLUX (Kg/sec m2)
6.01E-05

SEN. HEAT FLUX (Watts/m2)
2.14E 01

TOTAL HEAT FLUX (Watts/m2)
-3.72E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.876E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.696E-04

SCALING POT. TEMP. (Kelvin)
-5.986E-02

SCALING V. POT. TEMP. (Kelvin)
1.040E 00

ROUGHNESS LENGTH (Meters)
3.793E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.182E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.271E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.008E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.722E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.899E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.301

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.300E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811141400
START TIME: 14: 0: 0 PST
END TIME: 14:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.328	4.353	2.660	2.530	4.914	3.005	5.421

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.575	4.147	2.455	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 136430	1421 138069

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.15

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.643	5.18	5.86	NO DATA	329.3	1014.7	4.19E 02	15.575	286.885

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.807	5.05	5.70	NO DATA	-0.82

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.824	14.632	14.813	6.993E-03	59.29	5.674E-03	9.256	15.610	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.868	14.786	14.848	6.915E-03	58.04	5.613E-03	9.157	15.778	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141400
PAGE: 2
START TIME: 14: 0: 0 PST
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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.838 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.896

Z/L AT 10 METERS
-0.834

Z/L AT Z1
-1.539

Z/L AT Z2
-0.522

MONIN-OBUKHOV LENGTH
(Meters)
-1.199E 01

PSI1 AT Z1= 1.309854
PSI1 AT Z2= 0.784281
PSI2 AT Z1= 0.886562
PSI2 AT Z2= 0.526791

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-8.73E-03

HUMIDITY FLUX
(Kg/sec m2)
-4.10E-06

SEN. HEAT FLUX
(Watts/m2)
3.05E 00

TOTAL HEAT FLUX
(Watts/m2)
-4.26E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.434E-02

SCALING SPEC. HUMD.
(Kg/Kg)
3.962E-05

SCALING POT. TEMP.
(Kelvin)
-2.912E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.258E-02

ROUGHNESS LENGTH
(Meters)
6.533E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
7.113E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.35E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 6.08E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.47E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.47E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.15E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.19E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.62E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.09E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141400
PAGE: 3
START TIME: 14: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.734	5.10	5.78	NO DATA		15.575	-1.841	-1.743	-0.857	-0.759
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.832	14.718	14.816	6.951E-03	58.61	5.641E-03	9.204	15.703	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.297 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.328

Z/L AT 10 METERS
-0.305

MONIN-OBUKHOV LENGTH (Meters)
-3.275E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.09E-02

HUMIDITY FLUX (Kg/sec m2)
4.25E-05

SEN. HEAT FLUX (Watts/m2)
1.26E 01

TOTAL HEAT FLUX (Watts/m2)
-3.01E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.585E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.186E-04

SCALING POT. TEMP. (Kelvin)
-6.419E-02

SCALING V. POT. TEMP. (Kelvin)
1.533E 00

ROUGHNESS LENGTH (Meters)
1.290E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.665E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.512E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.254E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.017E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.685

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.327E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141430
START TIME: 14:30: 0 PST
END TIME: 14:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.280	4.285	2.285	2.134	4.915	2.707	5.827

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.450	4.155	2.456	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 137989	1421 139221

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.15

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.799	4.43	5.58	NO DATA	343.1	1014.7	3.77E 02	15.450	287.021

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.922	4.26	5.30	NO DATA	-0.91

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.980	14.770	14.951	6.856E-03	57.58	5.565E-03	9.080	15.769	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.983	14.875	14.936	6.720E-03	56.01	5.457E-03	8.903	15.896	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141430
PAGE: 2
START TIME: 14:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.044 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.054

Z/L AT 10 METERS
-0.050

Z/L AT Z1
-0.093

Z/L AT Z2
-0.032

MONIN-OBUKHOV LENGTH
(Meters)
-1.984E 02

PSI1 AT Z1= 0.255639
PSI1 AT Z2= 0.104047
PSI2 AT Z1= 0.163568
PSI2 AT Z2= 0.064436

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.96E-03

HUMIDITY FLUX
(Kg/sec m2)
-4.06E-06

SEN. HEAT FLUX
(Watts/m2)
1.42E-01

TOTAL HEAT FLUX
(Watts/m2)
-3.87E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
6.356E-02

SCALING SPEC. HUMD.
(Kg/Kg)
5.204E-05

SCALING POT. TEMP.
(Kelvin)
-1.797E-03

SCALING V. POT. TEMP.
(Kelvin)
7.086E-03

ROUGHNESS LENGTH
(Meters)
4.333E-10

DRAG COEF. AT 10 METERS
(Dimensionless)
4.040E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.70E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.09E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.76E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.48E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 5.51E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 9.09E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.63E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 6.68E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141430
PAGE: 3
START TIME: 14:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.868	4.33	5.43	NO DATA		15.450	-1.582	-1.484	-0.621	-0.523
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.966	14.829	14.927	6.784E-03	56.73	5.508E-03	8.986	15.840	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.415 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.452

Z/L AT 10 METERS
-0.421

MONIN-OBUKHOV LENGTH (Meters)
-2.376E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.10E-02

HUMIDITY FLUX (Kg/sec m2)
3.65E-05

SEN. HEAT FLUX (Watts/m2)
9.80E 00

TOTAL HEAT FLUX (Watts/m2)
-2.78E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.309E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.270E-04

SCALING POT. TEMP. (Kelvin)
-6.041E-02

SCALING V. POT. TEMP. (Kelvin)
1.710E 00

ROUGHNESS LENGTH (Meters)
9.476E-05

DRAG COEF. AT 10 METERS (Dimensionless)
9.156E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.715E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.649E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.910E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.544

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.317E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141500
START TIME: 15: 0: 0 PST
END TIME: 15:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.262	4.261	2.019	1.927	4.918	2.102	5.787

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.372	4.132	2.458	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 138538	1421 139743

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.13

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.854	3.92	5.49	NO DATA	341.8	1014.8	2.93E 02	15.372	287.074

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.974	3.87	5.16	NO DATA	-0.94

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.035	14.819	14.999	6.810E-03	57.00	5.529E-03	9.021	15.826	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.036	14.917	14.979	6.652E-03	55.26	5.403E-03	8.814	15.950	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141500
PAGE: 2
START TIME: 15: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0. 141 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10. 75

Z/L AT GMH
-0. 161

Z/L AT 10 METERS
-0. 150

Z/L AT Z1
-0. 276

Z/L AT Z2
-0. 094

MONIN-OBUKHOV LENGTH
(Meters)
-6. 680E 01

PSI1 AT Z1= 0. 543566
PSI1 AT Z2= 0. 257043
PSI2 AT Z1= 0. 360127
PSI2 AT Z2= 0. 164507

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5. 77E-04

HUMIDITY FLUX
(Kg/sec m2)
-1. 80E-06

SEN. HEAT FLUX
(Watts/m2)
1. 45E-02

TOTAL HEAT FLUX
(Watts/m2)
-2. 98E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1. 227

AIR SPECIFIC HEAT
(ITcal. /Kg Kel.)
2. 412E 02

WATER LAT. HEAT VAP.
(ITcal. /Kg)
5. 894E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2. 168E-02

SCALING SPEC. HUMD.
(Kg/Kg)
6. 753E-05

SCALING POT. TEMP.
(Kelvin)
-5. 386E-04

SCALING V. POT. TEMP.
(Kelvin)
1. 103E-02

ROUGHNESS LENGTH
(Meters)
5. 321E-27

DRAG COEF. AT 10 METERS
(Dimensionless)
4. 701E-06

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4. 95E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1. 27E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1. 01E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 2. 08E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1. 61E 01

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 7. 00E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -8. 78E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 4. 29E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141500
PAGE: 3
START TIME: 15: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.921	3.89	5.31	NO DATA		15.372	-1.451	-1.353	-0.498	-0.400
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.019	14.874	14.972	6.726E-03	56.06	5.462E-03	8.911	15.895	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.522 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.565

Z/L AT 10 METERS
-0.526

MONIN-OBUKHOV LENGTH (Meters)
-1.901E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.65E-02

HUMIDITY FLUX (Kg/sec m2)
3.28E-05

SEN. HEAT FLUX (Watts/m2)
8.48E 00

TOTAL HEAT FLUX (Watts/m2)
-2.04E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.158E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.306E-04

SCALING POT. TEMP. (Kelvin)
-5.907E-02

SCALING V. POT. TEMP. (Kelvin)
1.419E 00

ROUGHNESS LENGTH (Meters)
7.858E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.867E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.341E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.277E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.841E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.456

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.311E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141530
START TIME: 15:30: 0 PST
END TIME: 15:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.232	4.237	1.844	1.811	4.920	1.459	5.053

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.294	4.268	2.456	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 138438	1421 140019

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.27

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.844	3.59	5.32	NO DATA	316.8	1014.8	2.03E 02	15.294	287.083

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.002	3.65	5.01	NO DATA	-0.93

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.025	14.797	14.978	6.732E-03	56.38	5.465E-03	8.917	15.815	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.063	14.936	14.997	6.583E-03	54.60	5.347E-03	8.724	15.979	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141530
PAGE: 2
START TIME: 15:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-3.703 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.894E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= -5.97E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.19E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.89E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.87E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) <-2.0; functional limitation exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141530
PAGE: 3
START TIME: 15:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.932	3.63	5.16	NO DATA		15.294	-1.362	-1.264	-0.419	-0.321
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.030	14.875	14.973	6.653E-03	55.41	5.402E-03	8.814	15.906	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.603 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.650

Z/L AT 10 METERS
-0.605

MONIN-OBUKHOV LENGTH (Meters)
-1.652E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.41E-02

HUMIDITY FLUX (Kg/sec m2)
3.07E-05

SEN. HEAT FLUX (Watts/m2)
7.71E 00

TOTAL HEAT FLUX (Watts/m2)
-1.20E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.071E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.332E-04

SCALING POT. TEMP. (Kelvin)
-5.811E-02

SCALING V. POT. TEMP. (Kelvin)
9.052E-01

ROUGHNESS LENGTH (Meters)
7.008E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.697E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.147E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.065E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.223E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.369

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.305E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141600
START TIME: 16: 0: 0 PST
END TIME: 16:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.249	4.241	1.899	1.824	4.921	0.812	4.877

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.217	4.297	2.457	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 138646	1421 140123

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.30

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.865	3.70	5.44	NO DATA	310.8	1014.8	1.13E 02	15.217	287.098

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.012	3.68	5.03	NO DATA	-0.87

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.045	14.826	15.007	6.786E-03	56.76	5.509E-03	8.988	15.837	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.074	14.948	15.009	6.595E-03	54.66	5.357E-03	8.740	15.990	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141600
PAGE: 2
START TIME: 16: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-D MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM: DN/DZ=	GENERAL FORM: 'N'SLOPE=
-27.785 AT GMH	NOT COMPUTED	NOT COMPUTED	[(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	[(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMD. (Kg/Kg)	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
10.745	NOT COMPUTED	NOT COMPUTED	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert. Axis
			DWS/DZ= 1.86E-03	PSI=PSI1
Z/L AT GMH	SEN. HEAT FLUX			WS SLOPE=NOT COMPUTED
NOT COMPUTED	(Watts/m2)	SCALING POT. TEMP.	N=SPEC. HUMIDITY (Kg/Kg)	N=SPEC. HUMIDITY (Kg/Kg)
	NOT COMPUTED	(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert. Axis
Z/L AT 10 METERS		NOT COMPUTED	DSH/DZ= 1.53E-05	PSI=PSI2
NOT COMPUTED	TOTAL HEAT FLUX			SH SLOPE= NOT COMPUTED
	(Watts/m2)			
Z/L AT Z1	NOT COMPUTED	SCALING V. POT. TEMP.	N=POT. TEMP. (Kelvin)	N=POT. TEMP. (Kelvin)
NOT COMUTED		(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert. Axis
		NOT COMPUTED	DPT/DZ= -2.84E-03	PSI=PSI2
Z/L AT Z2				PTK SLOPE=NOT COMPUTED
NOT COMPUTED	MISCELLANEOUS			
		ROUGHNESS LENGH	N=V. POT. TEMP. (Kelvin)	N=V. POT. TEMP. (Kelvin)
MONIN-OBUKHOV LENGTH		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert. Axis
(Meters)	AIR DENSITY	NOT COMPUTED	DVPT/DZ= -2.19E-04	PSI=PSI2
NOT COMPUTED	(Kg/m3)			VPTK SLOPE=NOT COMPUTED
	1.227			
PSI1 AT Z1=NOT COMPUTED		DRAG COEF. AT 10 METERS		N=LnTEMP. STRUC. (KxM-2/3)
PSI1 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT	(Dimensionless)		Z=HEIGHT (M) Vert. Axis
PSI2 AT Z1=NOT COMPUTED	(ITcal./Kg Kel.)	NOT COMPUTED		PSI=NONE
PSI2 AT Z2=NOT COMPUTED	2.412E 02			CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP.			
	(ITcal./Kg)			
* GENERAL NOTES:	5.894E 05			

Profile data Richardson Number (RI) <-2.0; functional limitation exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141600
PAGE: 3
START TIME: 16: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.947	3.69	5.22	NO DATA		15.217	-1.270	-1.172	-0.323	-0.225
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.045	14.894	14.992	6.684E-03	55.62	5.428E-03	8.856	15.922	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.549 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.593

Z/L AT 10 METERS
-0.552

MONIN-OBUKHOV LENGTH (Meters)
-1.811E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.46E-02

HUMIDITY FLUX (Kg/sec m2)
3.07E-05

SEN. HEAT FLUX (Watts/m2)
7.40E 00

TOTAL HEAT FLUX (Watts/m2)
-3.02E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.089E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.294E-04

SCALING POT. TEMP. (Kelvin)
-5.485E-02

SCALING V. POT. TEMP. (Kelvin)
2.240E-01

ROUGHNESS LENGTH (Meters)
7.181E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.732E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.186E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.066E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
5.974E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.283

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.299E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141630
START TIME: 16:30: 0 PST
END TIME: 16:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.208	4.217	2.189	2.111	4.931	0.260	5.049

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.139	4.268	2.454	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 139348	1421 140657

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.27

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.935	4.24	5.19	NO DATA	316.7	1015.0	3.63E 01	15.139	287.160

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.066	4.22	4.89	NO DATA	-0.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.116	14.880	15.060	6.666E-03	55.52	5.413E-03	8.832	15.909	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.127	14.992	15.053	6.528E-03	53.93	5.303E-03	8.654	16.045	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141630
PAGE: 2
START TIME: 16:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) -6.266 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.50E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.10E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.15E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 7.30E-04	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
Z/L AT Z2 NOT COMPUTED	AIR DENSITY (Kg/m3) 1.227	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.412E 02			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	WATER LAT. HEAT VAP. (ITcal./Kg) 5.894E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) <-2.0; functional limitation exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141630
PAGE: 3
START TIME: 16:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.008	4.23	5.03	NO DATA		15.139	-1.131	-1.033	-0.196	-0.098
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.106	14.943	15.041	6.593E-03	54.66	5.354E-03	8.737	15.985	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.339 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.373

Z/L AT 10 METERS
-0.347

MONIN-OBUKHOV LENGTH (Meters)
-2.884E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.00E-02

HUMIDITY FLUX (Kg/sec m2)
3.53E-05

SEN. HEAT FLUX (Watts/m2)
7.46E 00

TOTAL HEAT FLUX (Watts/m2)
5.84E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.275E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.259E-04

SCALING POT. TEMP. (Kelvin)
-4.721E-02

SCALING V. POT. TEMP. (Kelvin)
-3.694E-01

ROUGHNESS LENGTH (Meters)
9.091E-05

DRAG COEF. AT 10 METERS (Dimensionless)
9.091E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.626E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.535E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.020E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.197

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.293E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141700
START TIME: 17: 0: 0 PST
END TIME: 17:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.379	4.353	2.519	2.458	4.945	0.079	5.170

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.061	4.261	2.454	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 139254	1421 140509

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.26

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.925	4.90	6.20	NO DATA	320.8	1015.2	1.11E 01	15.061	287.148

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.051	4.90	5.70	NO DATA	-0.65

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.106	14.939	15.120	7.154E-03	59.61	5.807E-03	9.478	15.899	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.112	15.031	15.092	6.909E-03	57.13	5.610E-03	9.157	16.030	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141700
PAGE: 2
START TIME: 17: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-98.728 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.894E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.57E-04

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.98E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.07E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 2.80E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) <-2.0; functional limitation exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141700
PAGE: 3
START TIME: 17: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.995	4.90	5.94	NO DATA		15.061	-1.066	-0.968	-0.070	0.028

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.093	14.991	15.089	7.023E-03	58.27	5.702E-03	9.307	15.972	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.210 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.236

Z/L AT 10 METERS
-0.219

MONIN-OBUKHOV LENGTH (Meters)
-4.560E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.81E-02

HUMIDITY FLUX (Kg/sec m2)
3.78E-05

SEN. HEAT FLUX (Watts/m2)
7.89E 00

TOTAL HEAT FLUX (Watts/m2)
9.01E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.513E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.035E-04

SCALING POT. TEMP. (Kelvin)
-4.205E-02

SCALING V. POT. TEMP. (Kelvin)
-4.802E-01

ROUGHNESS LENGTH (Meters)
1.195E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.534E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.289E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.778E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.363E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.111

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.286E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141730
START TIME: 17:30: 0 PST
END TIME: 17:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.487	4.477	2.895	2.823	4.958	0.074	5.288

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.983	4.293	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 139367	1421 140753

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	1	114.5	60.29

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.937	5.64	6.84	NO DATA	324.8	1015.4	1.04E 01	14.983	287.166

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.075	5.61	6.44	NO DATA	-0.50

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.118	14.996	15.176	7.475E-03	62.24	6.066E-03	9.903	15.911	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.137	15.106	15.168	7.271E-03	60.03	5.904E-03	9.638	16.055	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141730
PAGE: 2
START TIME: 17:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-13.973 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.894E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.16E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.64E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.92E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 8.90E-04

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) <-2.0; functional limitation exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141730
PAGE: 3
START TIME: 17:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.014	5.62	6.63	NO DATA		14.983	-0.969	-0.871	0.075	0.173
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.112	15.058	15.156	7.365E-03	61.04	5.979E-03	9.762	15.991	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.129 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.148

Z/L AT 10 METERS
-0.138

MONIN-OBUKHOV LENGTH (Meters)
-7.250E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.88E-02

HUMIDITY FLUX (Kg/sec m2)
4.04E-05

SEN. HEAT FLUX (Watts/m2)
8.07E 00

TOTAL HEAT FLUX (Watts/m2)
9.73E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.779E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.848E-04

SCALING POT. TEMP. (Kelvin)
-3.657E-02

SCALING V. POT. TEMP. (Kelvin)
-4.410E-01

ROUGHNESS LENGTH (Meters)
1.570E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.001E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.165E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.036E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.506E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.025

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.280E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141800
START TIME: 18: 0: 0 PST
END TIME: 18:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.424	4.414	3.091	2.993	4.977	0.074	5.312

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.906	4.121	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140597	1421 141981

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.12

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.060	6.01	6.46	NO DATA	325.6	1015.7	1.04E 01	14.906	287.289

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.198	5.94	6.07	NO DATA	-0.33

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.241	15.091	15.272	7.278E-03	60.15	5.908E-03	9.647	16.039	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.259	15.203	15.264	7.083E-03	58.04	5.752E-03	9.393	16.183	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141800
PAGE: 2
START TIME: 18: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-1.212 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.288

Z/L AT 10 METERS
-1.198

Z/L AT Z1
-2.211

Z/L AT Z2
-0.750

MONIN-OBUKHOV LENGTH
(Meters)
-8.344E 00

PSI1 AT Z1= 1.515651
PSI1 AT Z2= 0.944815
PSI2 AT Z1= 1.024562
PSI2 AT Z2= 0.637609

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.04E-03

HUMIDITY FLUX
(Kg/sec m2)
-6.49E-06

SEN. HEAT FLUX
(Watts/m2)
7.94E-01

TOTAL HEAT FLUX
(Watts/m2)
-2.56E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
4.975E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.063E-04

SCALING POT. TEMP.
(Kelvin)
-1.287E-02

SCALING V. POT. TEMP.
(Kelvin)
5.353E-03

ROUGHNESS LENGTH
(Meters)
5.836E-18

DRAG COEF. AT 10 METERS
(Dimensionless)
2.475E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.30E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.57E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.90E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 7.91E-04

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 7.04E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4.45E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.67E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 8.84E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141800
PAGE: 3
START TIME: 18: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.137	5.97	6.25	NO DATA		14.906	-0.769	-0.671	0.248	0.346
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.235	15.154	15.252	7.174E-03	59.01	5.825E-03	9.511	16.119	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.089 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.105

Z/L AT 10 METERS
-0.097

MONIN-OBUKHOV LENGTH (Meters)
-1.027E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.48E-02

HUMIDITY FLUX (Kg/sec m2)
4.39E-05

SEN. HEAT FLUX (Watts/m2)
7.05E 00

TOTAL HEAT FLUX (Watts/m2)
1.05E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.910E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.872E-04

SCALING POT. TEMP. (Kelvin)
-2.976E-02

SCALING V. POT. TEMP. (Kelvin)
-4.432E-01

ROUGHNESS LENGTH (Meters)
1.778E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.024E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.649E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.389E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
5.686E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.941

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.274E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141830
START TIME: 18:30: 0 PST
END TIME: 18:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.303	4.286	3.331	3.243	4.991	0.074	5.356

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.828	4.134	2.456	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142441	1421 143742

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.13

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.244	6.48	5.73	NO DATA	327.1	1015.9	1.03E 01	14.828	287.469

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.374	6.42	5.30	NO DATA	-0.16

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.425	15.225	15.406	6.914E-03	56.50	5.615E-03	9.171	16.232	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.436	15.327	15.389	6.711E-03	54.40	5.452E-03	8.905	16.369	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER 7811141830
PAGE 2
START TIME 18 30 0 PST
START DATE 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD RICHARDSON NUMBER
(+=Stable, -=Unstable)
-1.206 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.281

Z/L AT 10 METERS
-1.192

Z/L AT Z1
-2.200

Z/L AT Z2
-0.746

MONIN-OBUKHOV LENGTH
(Meters)
-8.386E 00

PSI1 AT Z1= 1.512683
PSI1 AT Z2= 0.942459
PSI2 AT Z1= 1.022584
PSI2 AT Z2= 0.635988

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.72E-03

HUMIDITY FLUX
(Kg/sec m2)
-5.08E-06

SEN. HEAT FLUX
(Watts/m2)
3.37E-01

TOTAL HEAT FLUX
(Watts/m2)
-2.25E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.744E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.107E-04

SCALING POT. TEMP.
(Kelvin)
-7.270E-03

SCALING V. POT. TEMP.
(Kelvin)
1.178E-02

ROUGHNESS LENGTH
(Meters)
6.933E-26

DRAG COEF. AT 10 METERS
(Dimensionless)
1.402E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.50E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.64E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.07E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.74E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 9.35E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4.27E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -6.51E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 4.02E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141830
PAGE: 3
START TIME: 18:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.317	6.44	5.50	NO DATA		14.828	-0.511	-0.413	0.455	0.553
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.415	15.283	15.381	6.805E-03	55.36	5.528E-03	9.029	16.308	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.051 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.062

Z/L AT 10 METERS
-0.058

MONIN-OBUKHOV LENGTH (Meters)
-1.729E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.38E-02

HUMIDITY FLUX (Kg/sec m2)
5.00E-05

SEN. HEAT FLUX (Watts/m2)
5.51E 00

TOTAL HEAT FLUX (Watts/m2)
1.19E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.094E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.946E-04

SCALING POT. TEMP. (Kelvin)
-2.126E-02

SCALING V. POT. TEMP. (Kelvin)
-4.569E-01

ROUGHNESS LENGTH (Meters)
2.094E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.055E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.384E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.000E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.451E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.856

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.268E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141900
START TIME: 19: 0: 0 PST
END TIME: 19:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.463	4.445	3.351	3.230	4.993	0.075	5.511

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.750	4.159	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142757	1421 144091

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.16

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.276	6.52	6.68	NO DATA	332.4	1015.9	1.04E 01	14.750	287.502

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.409	6.40	6.26	NO DATA	0.01

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.456	15.324	15.504	7.384E-03	60.22	5.997E-03	9.795	16.265	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.470	15.427	15.489	7.168E-03	57.99	5.824E-03	9.513	16.406	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141900
PAGE: 2
START TIME: 19: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.337 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.371

Z/L AT 10 METERS
-0.345

Z/L AT Z1
-0.636

Z/L AT Z2
-0.216

MONIN-OBUKHOV LENGTH
(Meters)
-2.899E 01

PSI1 AT Z1= 0.869976
PSI1 AT Z2= 0.464785
PSI2 AT Z1= 0.586020
PSI2 AT Z2= 0.305784

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.58E-03

HUMIDITY FLUX
(Kg/sec m2)
-7.63E-06

SEN. HEAT FLUX
(Watts/m2)
6.22E-01

TOTAL HEAT FLUX
(Watts/m2)
-2.86E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
6.107E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.018E-04

SCALING POT. TEMP.
(Kelvin)
-8.222E-03

SCALING V. POT. TEMP.
(Kelvin)
9.291E-03

ROUGHNESS LENGTH
(Meters)
9.101E-16

DRAG COEF. AT 10 METERS
(Dimensionless)
3.730E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.19E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.73E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.40E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.58E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 5.73E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4.65E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -5.75E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 5.09E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141900
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START TIME: 19: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.350	6.44	6.45	NO DATA		14.750	-0.400	-0.302	0.632	0.730
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.448	15.382	15.480	7.269E-03	59.01	5.905E-03	9.645	16.343	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.043 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.053

Z/L AT 10 METERS
-0.049

MONIN-OBUKHOV LENGTH (Meters)
-2.030E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.38E-02

HUMIDITY FLUX (Kg/sec m2)
4.55E-05

SEN. HEAT FLUX (Watts/m2)
4.70E 00

TOTAL HEAT FLUX (Watts/m2)
1.07E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.094E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.773E-04

SCALING POT. TEMP. (Kelvin)
-1.810E-02

SCALING V. POT. TEMP. (Kelvin)
-4.110E-01

ROUGHNESS LENGTH (Meters)
2.094E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.055E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.383E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.554E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
3.790E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.771

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.262E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811141930
START TIME: 19:30: 0 PST
END TIME: 19:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.505	4.479	3.117	2.998	4.994	0.075	5.773

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.800	4.169	2.460	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142360	1421 143705

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.17

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.236	6.06	6.92	NO DATA	341.3	1015.9	1.05E 01	14.800	287.463

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.371	5.95	6.46	NO DATA	0.16

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.417	15.302	15.483	7.511E-03	61.40	6.099E-03	9.962	16.223	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.432	15.403	15.464	7.270E-03	58.95	5.906E-03	9.647	16.365	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811141930
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START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.408 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.445

Z/L AT 10 METERS
-0.414

Z/L AT Z1
-0.764

Z/L AT Z2
-0.259

MONIN-OBUKHOV LENGTH
(Meters)
-2.413E 01

PSI1 AT Z1= 0.953717
PSI1 AT Z2= 0.522617
PSI2 AT Z1= 0.643735
PSI2 AT Z2= 0.345654

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.41E-03

HUMIDITY FLUX
(Kg/sec m2)
-8.55E-06

SEN. HEAT FLUX
(Watts/m2)
6.74E-01

TOTAL HEAT FLUX
(Watts/m2)
-3.09E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
5.997E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.162E-04

SCALING POT. TEMP.
(Kelvin)
-9.069E-03

SCALING V. POT. TEMP.
(Kelvin)
1.095E-02

ROUGHNESS LENGTH
(Meters)
6.348E-15

DRAG COEF. AT 10 METERS
(Dimensionless)
3.597E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.12E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.94E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.51E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.82E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 5.84E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4.07E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -5.22E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 4.32E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811141930
PAGE: 3
START TIME: 19:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.311	6.00	6.68	NO DATA		14.800	-0.489	-0.391	0.559	0.657
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.409	15.359	15.457	7.382E-03	60.08	5.996E-03	9.794	16.302	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.063 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.075

Z/L AT 10 METERS
-0.070

MONIN-OBUKHOV LENGTH (Meters)
-1.428E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.52E-02

HUMIDITY FLUX (Kg/sec m2)
4.18E-05

SEN. HEAT FLUX (Watts/m2)
5.15E 00

TOTAL HEAT FLUX (Watts/m2)
9.77E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.920E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.774E-04

SCALING POT. TEMP. (Kelvin)
-2.165E-02

SCALING V. POT. TEMP. (Kelvin)
-4.107E-01

ROUGHNESS LENGTH (Meters)
1.794E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.026E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.688E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.178E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.157E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.825

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.266E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811142000
START TIME: 20: 0: 0 PST
END TIME: 20:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.657	4.611	3.038	2.957	5.007	0.077	5.763

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.833	4.185	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141537	1421 142879

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.154	5.91	7.83	NO DATA	340.9	1016.1	1.07E 01	14.833	287.381

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.288	5.87	7.25	NO DATA	0.29

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.334	15.287	15.467	7.991E-03	65.66	6.486E-03	10.596	16.137	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.349	15.377	15.439	7.677E-03	62.57	6.234E-03	10.185	16.278	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811142000
PAGE: 2
START TIME: 20: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) -3.228 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.96E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 2.53E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.49E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 2.88E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
Z/L AT Z2 NOT COMPUTED	AIR DENSITY (Kg/m3) 1.227	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.414E 02			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	WATER LAT. HEAT VAP. (ITcal./Kg) 5.893E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) <-2.0; functional limitation exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811142000
PAGE: 3
START TIME: 20: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.229	5.89	7.52	NO DATA		14.833	-0.604	-0.506	0.505	0.603
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.327	15.338	15.436	7.823E-03	63.99	6.351E-03	10.376	16.215	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.077 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.092

Z/L AT 10 METERS
-0.085

MONIN-OBUKHOV LENGTH (Meters)
-1.172E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.33E-02

HUMIDITY FLUX (Kg/sec m2)
3.78E-05

SEN. HEAT FLUX (Watts/m2)
5.88E 00

TOTAL HEAT FLUX (Watts/m2)
8.84E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.879E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.639E-04

SCALING POT. TEMP. (Kelvin)
-2.524E-02

SCALING V. POT. TEMP. (Kelvin)
-3.796E-01

ROUGHNESS LENGTH (Meters)
1.727E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.019E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.531E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.780E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.743E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.861

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.269E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811142030
START TIME: 20:30: 0 PST
END TIME: 20:59:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.432	4.414	3.291	3.174	5.017	0.076	5.748

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.867	4.176	2.445	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143135	1421 144446

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.314	6.40	6.48	NO DATA	340.4	1016.3	1.06E 01	14.867	287.539

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.445	6.29	6.07	NO DATA	0.39

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.494	15.347	15.528	7.282E-03	59.25	5.912E-03	9.660	16.305	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.506	15.450	15.511	7.076E-03	57.11	5.748E-03	9.392	16.444	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811142030
PAGE: 2
START TIME: 20:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.323 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.355

Z/L AT 10 METERS
-0.331

Z/L AT Z1
-0.610

Z/L AT Z2
-0.207

MONIN-OBUKHOV LENGTH
(Meters)
-3.023E 01

PSI1 AT Z1= 0.851487
PSI1 AT Z2= 0.452239
PSI2 AT Z1= 0.573254
PSI2 AT Z2= 0.297155

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.92E-03

HUMIDITY FLUX
(Kg/sec m2)
-6.70E-06

SEN. HEAT FLUX
(Watts/m2)
4.79E-01

TOTAL HEAT FLUX
(Watts/m2)
-2.67E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
5.656E-02

SCALING SPEC. HUMD.
(Kg/Kg)
9.662E-05

SCALING POT. TEMP.
(Kelvin)
-6.835E-03

SCALING V. POT. TEMP.
(Kelvin)
9.783E-03

ROUGHNESS LENGTH
(Meters)
9.441E-17

DRAG COEF. AT 10 METERS
(Dimensionless)
3.199E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.11E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.65E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.17E-03

N=V POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.68E-03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 6.19E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4.90E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -6.92E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 4.83E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811142030
PAGE: 3
START TIME: 20:30: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.387	6.33	6.26	NO DATA		14.867	-0.480	-0.382	0.538	0.636
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.485	15.405	15.503	7.172E-03	58.09	5.824E-03	9.517	16.382	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.052 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.063

Z/L AT 10 METERS
-0.058

MONIN-OBUKHOV LENGTH (Meters)
-1.710E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.16E-02

HUMIDITY FLUX (Kg/sec m2)
4.63E-05

SEN. HEAT FLUX (Watts/m2)
5.24E 00

TOTAL HEAT FLUX (Watts/m2)
1.09E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.050E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.841E-04

SCALING POT. TEMP. (Kelvin)
-2.062E-02

SCALING V. POT. TEMP. (Kelvin)
-4.285E-01

ROUGHNESS LENGTH (Meters)
2.017E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.048E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.204E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.633E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.228E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.898

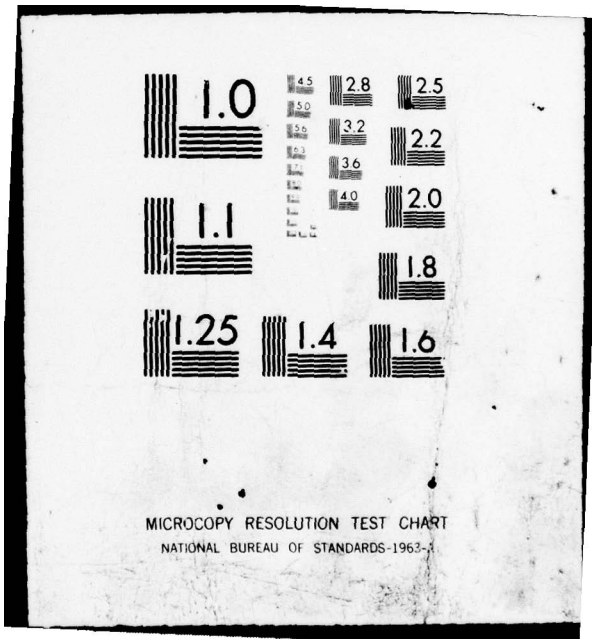
ABS. HUMID. AT WT LEVEL (Kg/m3)
1.271E-02

* END

AD-A074 826 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
MICROMETEOROLOGICAL DATA REPORT FOR THE NOVEMBER 1978 ELECTRO-O--ETC(U)
AUG 79 T V BLANC
UNCLASSIFIED NRL-MR-4056 SBIE-AD-E000 325 NL

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AD A074826




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811142100
START TIME: 21: 0: 0 PST
END TIME: 21:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6. 204	0. 000	0. 000	4. 453	4. 434	3. 636	3. 471	5. 030	0. 076	5. 726

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4. 900	4. 249	2. 445	0. 000	0. 000	0. 000	0. 000	6. 204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 144381	1421 145723

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114. 4	60. 25

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14. 438	7. 07	6. 60	NO DATA		339. 7	1016. 5	1. 06E 01	14. 900	287. 665

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14. 572	6. 86	6. 19	NO DATA	0. 44

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18. 45	14. 619	15. 480	15. 661	7. 338E-03	59. 26	5. 960E-03	9. 740	16. 437	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6. 26	14. 634	15. 586	15. 647	7. 130E-03	57. 10	5. 793E-03	9. 468	16. 580	NO DATA

* CONTINUED ON PAGE 2

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START TIME: 21: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.116 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.134

Z/L AT 10 METERS
-0.124

Z/L AT Z1
-0.230

Z/L AT Z2
-0.078

MONIN-OBUKHOV LENGTH
(Meters)
-8.038E 01

PSI1 AT Z1= 0.483678
PSI1 AT Z2= 0.222555
PSI2 AT Z1= 0.318794
PSI2 AT Z2= 0.141544

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-9.56E-03

HUMIDITY FLUX
(Kg/sec m2)
-9.43E-06

SEN. HEAT FLUX
(Watts/m2)
8.40E-01

TOTAL HEAT FLUX
(Watts/m2)
-3.30E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.891E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.830E-02

SCALING SPEC. HUMD.
(Kg/Kg)
8.711E-05

SCALING POT. TEMP.
(Kelvin)
-7.678E-03

SCALING V. POT. TEMP.
(Kelvin)
7.306E-03

ROUGHNESS LENGTH
(Meters)
1.100E-11

DRAG COEF. AT 10 METERS
(Dimensionless)
7.797E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.08E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.68E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.48E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.41E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.96E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 5.43E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -6.16E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 6.47E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811142100
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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.513	6.94	6.38	NO DATA		14.900	-0.387	-0.289	0.640	0.738
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.611	15.540	15.638	7.227E-03	58.09	5.871E-03	9.595	16.516	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.033 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.041

Z/L AT 10 METERS
-0.038

MONIN-OBUKHOV LENGTH (Meters)
-2.619E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.43E-02

HUMIDITY FLUX (Kg/sec m2)
5.05E-05

SEN. HEAT FLUX (Watts/m2)
4.77E 00

TOTAL HEAT FLUX (Watts/m2)
1.19E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.290E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.798E-04

SCALING POT. TEMP. (Kelvin)
-1.680E-02

SCALING V. POT. TEMP. (Kelvin)
-4.186E-01

ROUGHNESS LENGTH (Meters)
2.466E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.088E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.244E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.050E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
3.846E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.934

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.274E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811142200
START TIME: 22: 0: 0 PST
END TIME: 22:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6. 204	0. 000	0. 000	4. 697	4. 656	3. 459	3. 327	5. 046	0. 078	5. 672

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4. 982	4. 284	2. 446	0. 000	0. 000	0. 000	0. 000	6. 204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143247	1421 144613

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114. 5	60. 28

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14. 325	6. 73	8. 04	NO DATA		337. 8	1016. 7	1. 08E 01	14. 982	287. 553
AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE				
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)				
14. 461	6. 59	7. 52	NO DATA		0. 43				

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18. 45	14. 505	15. 474	15. 655	8. 104E-03	65. 90	6. 578E-03	10. 752	16. 317	NO DATA
HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6. 26	14. 523	15. 571	15. 632	7. 816E-03	63. 02	6. 347E-03	10. 375	16. 461	NO DATA

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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.290 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.320

Z/L AT 10 METERS
-0.298

Z/L AT Z1
-0.550

Z/L AT Z2
-0.187

MONIN-OBUKHOV LENGTH
(Meters)
-3.353E 01

PSI1 AT Z1= 0.806657
PSI1 AT Z2= 0.422170
PSI2 AT Z1= 0.542270
PSI2 AT Z2= 0.276508

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.16E-03

HUMIDITY FLUX
(Kg/sec m2)
-1.17E-05

SEN. HEAT FLUX
(Watts/m2)
8.73E-01

TOTAL HEAT FLUX
(Watts/m2)
-3.87E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
7.086E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.340E-04

SCALING POT. TEMP.
(Kelvin)
-9.932E-03

SCALING V. POT. TEMP.
(Kelvin)
1.318E-02

ROUGHNESS LENGTH
(Meters)
5.685E-14

DRAG COEF. AT 10 METERS
(Dimensionless)
5.022E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.42E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.32E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.72E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 2.29E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.94E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 3.53E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -4.76E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 3.59E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811142200
PAGE: 3
START TIME: 22: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.401	6.64	7.76	NO DATA		14.982	-0.581	-0.483	0.547	0.645
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.499	15.529	15.627	7.950E-03	64.34	6.454E-03	10.550	16.397	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.051 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.062

Z/L AT 10 METERS
-0.058

MONIN-OBUKHOV LENGTH (Meters)
-1.731E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.78E-02

HUMIDITY FLUX (Kg/sec m2)
4.25E-05

SEN. HEAT FLUX (Watts/m2)
6.14E 00

TOTAL HEAT FLUX (Watts/m2)
1.00E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.170E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.597E-04

SCALING POT. TEMP. (Kelvin)
-2.282E-02

SCALING V. POT. TEMP. (Kelvin)
-3.724E-01

ROUGHNESS LENGTH (Meters)
2.235E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.068E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.710E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.253E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.951E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.024

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.280E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811142300
START TIME: 23: 0: 0 PST
END TIME: 23:29:50 PST
START DATE: 14 Nov 1978 (DAY 318)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.468	4.456	2.789	2.701	5.062	0.077	5.493

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.045	4.297	2.437	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143844	1421 145122

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.30

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.384	5.43	6.66	NO DATA	331.8	1017.0	1.08E 01	15.045	287.608

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.512	5.38	6.32	NO DATA	0.29

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.565	15.431	15.611	7.373E-03	59.73	5.984E-03	9.784	16.380	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.574	15.534	15.596	7.198E-03	57.86	5.845E-03	9.557	16.516	NO DATA

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RUN NUMBER: 7811142300
PAGE: 2
START TIME: 23: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) -1.032 AT GMH	MOMENTUM FLUX (Nt/m2) -1.45E-03	FRICTION VELOCITY (Meters/sec) 3.437E-02	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.75	HUMIDITY FLUX (Kg/sec m2) -3.93E-06	SCALING SPEC. HUMD. (Kg/Kg) 9.317E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.23E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE= 1.02E 01
Z/L AT GMH -1.099	SEN. HEAT FLUX (Watts/m2) 2.37E-01	SCALING POT. TEMP. (Kelvin) -5.551E-03	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.40E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= 5.08E 03
Z/L AT 10 METERS -1.023	TOTAL HEAT FLUX (Watts/m2) -2.02E 01			
Z/L AT Z1 -1.887		SCALING V. POT. TEMP. (Kelvin) 1.043E-02	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.33E-04	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE= -8.52E 01
Z/L AT Z2 -0.640	MISCELLANEOUS			
MONIN-OBUKHOV LENGTH (Meters) -9.776E 00	AIR DENSITY (Kg/m3) 1.227	ROUGHNESS LENGTH (Meters) 1.333E-23	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 1.57E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE= 4.53E 01
PSI1 AT Z1= 1.424012 PSI1 AT Z2= 0.872612 PSI2 AT Z1= 0.963334 PSI2 AT Z2= 0.587840	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.413E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.181E-05		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.891E 05			

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811142300
PAGE: 3
START TIME: 23: 0: 0 PST
START DATE: 14 Nov 1978 (DAY 318)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.456	5.40	6.48	NO DATA		15.045	-0.589	-0.491	0.444	0.542
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.554	15.489	15.587	7.280E-03	58.72	5.910E-03	9.663	16.455	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.100 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.117

Z/L AT 10 METERS
-0.109

MONIN-OBUKHOV LENGTH (Meters)
-9.212E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.53E-02

HUMIDITY FLUX (Kg/sec m2)
3.97E-05

SEN. HEAT FLUX (Watts/m2)
5.51E 00

TOTAL HEAT FLUX (Watts/m2)
9.27E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.696E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.908E-04

SCALING POT. TEMP. (Kelvin)
-2.619E-02

SCALING V. POT. TEMP. (Kelvin)
-4.408E-01

ROUGHNESS LENGTH (Meters)
1.446E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.864E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.876E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.971E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.441E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.093

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.285E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150330
START TIME: 3:30: 0 PST
END TIME: 3:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.867	4.785	2.078	2.030	5.101	0.085	5.717

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.330	4.181	2.435	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142016	1421 143169

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.202	4.03	8.99	NO DATA	339.4	1017.6	1.18E 01	15.330	287.419

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.317	4.06	8.29	NO DATA	-0.23

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.382	15.426	15.607	8.646E-03	70.83	7.008E-03	11.466	16.187	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.378	15.485	15.546	8.240E-03	67.03	6.682E-03	10.932	16.308	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150330
PAGE: 2
START TIME: 3:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 1.341 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -3.30E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.29E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 4.30E-04	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED		ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 6.12E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS			
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.228	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal. /Kg Kel.) 2.415E 02			
	WATER LAT. HEAT VAP. (ITcal. /Kg) 5.892E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150330
PAGE: 3
START TIME: 3:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.266	4.05	8.62	NO DATA		15.330	-1.064	-0.966	0.130	0.228
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.364	15.460	15.558	8.428E-03	68.78	6.833E-03	11.179	16.255	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.367 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.401

Z/L AT 10 METERS
-0.374

MONIN-OBUKHOV LENGTH (Meters)
-2.676E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.81E-02

HUMIDITY FLUX (Kg/sec m2)
2.49E-05

SEN. HEAT FLUX (Watts/m2)
6.96E 00

TOTAL HEAT FLUX (Watts/m2)
5.65E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.214E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.668E-04

SCALING POT. TEMP. (Kelvin)
-4.615E-02

SCALING V. POT. TEMP. (Kelvin)
-3.748E-01

ROUGHNESS LENGTH (Meters)
8.432E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.974E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.473E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.486E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
5.601E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.409

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.308E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150400
START TIME: 4: 0: 0 PST
END TIME: 4:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.160	0.000	0.000	4.952	4.862	1.832	1.785	5.114	0.088	5.889

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.361	4.113	2.435	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141800	1421 142949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	2	0	0	0	0	114.4	60.11

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.180	3.57	9.49	NO DATA	345.2	1017.8	1.23E 01	15.361	287.397

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.295	3.61	8.75	NO DATA	-0.14

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.361	15.446	15.627	8.941E-03	73.35	7.246E-03	11.857	16.164	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.356	15.500	15.561	8.504E-03	69.27	6.894E-03	11.281	16.285	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150400
PAGE: 2
START TIME: 4: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 1.399 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -3.31E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.54E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 4.51E-04	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED				
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 6.59E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.228	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415E 02			
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.893E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150400
PAGE: 3
START TIME: 4: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.244	3.59	9.10	NO DATA		15.361	-1.117	-1.019	0.116	0.214
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.342	15.477	15.575	8.706E-03	71.14	7.057E-03	11.548	16.232	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.537 AT GMH	-1.38E-02	1.058E-01	1.119E-02	1.228
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
10.75	2.08E-05	-1.604E-04	2.084E-05	2.415E 02
Z/L AT GMH	SEN. HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	WITH POT. TEMPERATURE (Meter Kel./sec)	WATER LAT. HEAT VAP. (ITcal./Kg)
-0.581	6.67E 00	-5.074E-02	5.368E-03	5.893E 05
Z/L AT 10 METERS	TOTAL HEAT FLUX (Watts/m2)	SCALING V. POT. TEMP. (Kelvin)		VAP. PRES. AT WT LEVEL (Millibar)
-0.541	4.58E 01	-3.485E-01		17.444
MONIN-OBUKHOV LENGTH (Meters)		ROUGHNESS LENGTH (Meters)		ABS. HUMID. AT WT LEVEL (Kg/m3)
-1.850E 01		6.888E-05		1.310E-02
		DRAG COEF. AT 10 METERS (Dimensionless)		
		8.671E-04		

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150430
START TIME: 4:30: 0 PST
END TIME: 4:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.882	4.787	1.363	1.323	5.135	0.090	5.783

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.393	4.170	2.436	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141222	1421 142272

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.4	60.17

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.122	2.72	9.07	NO DATA	341.6	1018.1	1.25E 01	15.393	287.335

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.227	2.75	8.30	NO DATA	-0.01

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.303	15.352	15.533	8.693E-03	71.57	7.041E-03	11.526	16.104	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.289	15.395	15.457	8.250E-03	67.49	6.685E-03	10.942	16.214	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150430
PAGE: 2
START TIME: 4:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
6.325 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= -2.79E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 3.59E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 1.45E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 7.67E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150430
PAGE: 3
START TIME: 4:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.181	2.73	8.66	NO DATA		15.393	-1.212	-1.114	-0.016	0.082
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.279	15.377	15.475	8.455E-03	69.36	6.850E-03	11.213	16.165	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-1.227 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.305

Z/L AT 10 METERS
-1.214

MONIN-OBUKHOV LENGTH
(Meters)
-8.235E 00

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.45E-03

HUMIDITY FLUX
(Kg/sec m2)
1.69E-05

SEN. HEAT FLUX
(Watts/m2)
5.97E 00

TOTAL HEAT FLUX
(Watts/m2)
3.50E 01

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
7.786E-02

SCALING SPEC. HUMID.
(Kg/Kg)
-1.762E-04

SCALING POT. TEMP.
(Kelvin)
-6.170E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.620E-01

ROUGHNESS LENGTH
(Meters)
4.579E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
8.105E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
6.062E-03

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
1.686E-05

WITH POT. TEMPERATURE
(Meter Kel./sec)
4.804E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL
(Millibar)
17.480

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.313E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150500
START TIME: 5: 0: 0 PST
END TIME: 5:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.766	4.678	1.460	1.442	5.142	0.088	5.071

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.425	4.331	2.435	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141478	1421 142539

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.33

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.148	2.89	8.37	NO DATA	317.4	1018.2	1.22E 01	15.425	287.361

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.254	2.97	7.65	NO DATA	0.13

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.329	15.321	15.501	8.290E-03	68.14	6.714E-03	10.991	16.131	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.315	15.371	15.433	7.892E-03	64.45	6.394E-03	10.467	16.242	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150500
PAGE: 2
START TIME: 5: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.828 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= -7.41E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 3.22E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 1.34E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 6.93E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150500
PAGE: 3
START TIME: 5: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.207	2.94	7.98	NO DATA		15.425	-1.218	-1.120	-0.075	0.023
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.305	15.350	15.448	8.076E-03	66.14	6.543E-03	10.710	16.193	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-1.005 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.073

Z/L AT 10 METERS
-0.998

MONIN-OBUKHOV LENGTH (Meters)
-1.002E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.76E-03

HUMIDITY FLUX (Kg/sec m2)
1.97E-05

SEN. HEAT FLUX (Watts/m2)
6.25E 00

TOTAL HEAT FLUX (Watts/m2)
4.26E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.439E-02

SCALING SPEC. HUMID. (Kg/Kg)
-1.898E-04

SCALING POT. TEMP. (Kelvin)
-5.959E-02

SCALING V. POT. TEMP. (Kelvin)
-4.063E-01

ROUGHNESS LENGTH (Meters)
5.068E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.240E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.122E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.970E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
5.029E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.516

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.315E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150530
START TIME: 5:30: 0 PST
END TIME: 5:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.828	4.733	1.354	1.331	5.153	0.089	4.649

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.456	4.213	2.434	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141266	1421 142242

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.3	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.127	2.70	8.73	NO DATA	303.1	1018.4	1.24E 01	15.456	287.335

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.224	2.76	7.98	NO DATA	0.30

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.307	15.328	15.509	8.497E-03	69.94	6.881E-03	11.266	16.108	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.286	15.367	15.428	8.072E-03	66.04	6.539E-03	10.706	16.211	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150530
PAGE: 2
START TIME: 5:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 2.276 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -5.73E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.44E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.20E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED				
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 8.17E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.230			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.414E 02	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.893E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150530
PAGE: 3
START TIME: 5:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.181	2.74	8.33	NO DATA		15.456	-1.275	-1.177	-0.105	-0.007
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.279	15.351	15.449	8.269E-03	67.83	6.697E-03	10.966	16.165	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-1.264 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.344

Z/L AT 10 METERS
-1.251

MONIN-OBUKHOV LENGTH (Meters)
-7.996E 00

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.47E-03

HUMIDITY FLUX (Kg/sec m2)
1.77E-05

SEN. HEAT FLUX (Watts/m2)
6.17E 00

TOTAL HEAT FLUX (Watts/m2)
3.75E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
7.795E-02

SCALING SPEC. HUMID. (Kg/Kg)
-1.850E-04

SCALING POT. TEMP. (Kelvin)
-6.369E-02

SCALING V. POT. TEMP. (Kelvin)
-3.872E-01

ROUGHNESS LENGTH (Meters)
4.586E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.107E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.076E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.773E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.965E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.551

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.318E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150600
START TIME: 6: 0: 0 PST
END TIME: 6:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.796	4.705	1.202	1.182	5.172	0.098	4.880

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.488	4.145	2.436	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141435	1421 142440

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.144	2.42	8.54	NO DATA	310.9	1018.6	1.37E 01	15.488	287.354

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.244	2.48	7.81	NO DATA	0.46

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.324	15.329	15.510	8.386E-03	68.95	6.789E-03	11.119	16.126	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.305	15.373	15.434	7.979E-03	65.20	6.462E-03	10.583	16.232	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150600
PAGE: 2
START TIME: 6: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
2.108 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= -5.54E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 3.30E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 1.91E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 7.63E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150600
PAGE: 3
START TIME: 6: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.200	2.46	8.15	NO DATA		15.488	-1.288	-1.190	-0.133	-0.035
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.298	15.355	15.453	8.167E-03	66.92	6.613E-03	10.831	16.185	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-1.718 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.819

Z/L AT 10 METERS
-1.693

MONIN-OBUKHOV LENGTH (Meters)
-5.907E 00

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.88E-03

HUMIDITY FLUX (Kg/sec m2)
1.63E-05

SEN. HEAT FLUX (Watts/m2)
5.83E 00

TOTAL HEAT FLUX (Watts/m2)
3.24E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.914E-02

SCALING SPEC. HUMID. (Kg/Kg)
-1.920E-04

SCALING POT. TEMP. (Kelvin)
-6.784E-02

SCALING V. POT. TEMP. (Kelvin)
-3.770E-01

ROUGHNESS LENGTH (Meters)
3.975E-05

DRAG COEF. AT 10 METERS (Dimensionless)
7.921E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.781E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.633E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.691E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.587

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.320E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150630
START TIME: 6:30: 0 PST
END TIME: 6:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.802	4.706	1.299	1.281	5.196	0.271	4.986

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.520	4.140	2.436	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142000	1421 142921

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.4	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.200	2.60	8.57	NO DATA	314.5	1019.0	3.79E 01	15.520	287.406

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.292	2.67	7.81	NO DATA	0.62

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.381	15.388	15.569	8.401E-03	68.84	6.800E-03	11.142	16.185	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.353	15.421	15.483	7.980E-03	65.02	6.462E-03	10.586	16.282	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150630
PAGE: 2
START TIME: 6:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 2.228 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N' SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -6.48E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.41E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.76E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED				
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 8.68E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.230	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.414E 02			
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.893E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150630
PAGE: 3
START TIME: 6:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.251	2.64	8.17	NO DATA		15.520	-1.269	-1.171	-0.112	-0.014
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.349	15.408	15.506	8.175E-03	66.77	6.619E-03	10.844	16.239	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-1.393 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.479

Z/L AT 10 METERS
-1.376

MONIN-OBUKHOV LENGTH (Meters)
-7.267E 00

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.90E-03

HUMIDITY FLUX (Kg/sec m2)
1.76E-05

SEN. HEAT FLUX (Watts/m2)
6.02E 00

TOTAL HEAT FLUX (Watts/m2)
1.16E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
7.488E-02

SCALING SPEC. HUMID. (Kg/Kg)
-1.912E-04

SCALING POT. TEMP. (Kelvin)
-6.469E-02

SCALING V. POT. TEMP. (Kelvin)
-1.247E-01

ROUGHNESS LENGTH (Meters)
4.367E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.043E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.607E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.761E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.844E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.623

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.323E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150700
START TIME: 7: 0: 0 PST
END TIME: 7:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.701	4.590	1.488	1.477	5.224	0.843	5.329

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.551	4.119	2.437	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143971	1421 144577

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.12

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.397	2.95	7.96	NO DATA	326.2	1019.4	1.18E 02	15.551	287.587

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.458	3.03	7.12	NO DATA	0.76

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.578	15.537	15.718	8.056E-03	65.21	6.522E-03	10.691	16.393	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.519	15.535	15.596	7.607E-03	61.36	6.161E-03	10.098	16.458	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811150700
PAGE: 2
START TIME: 7: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
2.624 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= -8.75E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 3.64E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 5.92E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.23E-02

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150700
PAGE: 3
START TIME: 7: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.431	3.00	7.51	NO DATA		15.551	-1.120	-1.022	-0.014	0.084
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.529	15.537	15.635	7.815E-03	63.13	6.328E-03	10.372	16.429	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.899 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.961

Z/L AT 10 METERS
-0.894

MONIN-OBUKHOV LENGTH (Meters)
-1.118E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.16E-03

HUMIDITY FLUX (Kg/sec m2)
2.15E-05

SEN. HEAT FLUX (Watts/m2)
5.99E 00

TOTAL HEAT FLUX (Watts/m2)
-5.85E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.630E-02

SCALING SPEC. HUMID. (Kg/Kg)
-2.028E-04

SCALING POT. TEMP. (Kelvin)
-5.586E-02

SCALING V. POT. TEMP. (Kelvin)
5.456E-01

ROUGHNESS LENGTH (Meters)
5.216E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.279E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.447E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.153E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.820E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.658

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.325E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811150730
START TIME: 7:30: 0 PST
END TIME: 7:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.693	4.588	1.467	1.451	5.253	1.541	5.397

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.583	4.098	2.438	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 145430	1421 145825

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* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.4	60.10

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.543	2.91	7.90	NO DATA	328.5	1019.9	2.15E 02	15.583	287.723

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.583	2.98	7.11	NO DATA	0.87

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.724	15.679	15.860	8.020E-03	64.35	6.494E-03	10.649	16.549	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.644	15.659	15.720	7.597E-03	60.80	6.152E-03	10.088	16.591	NO DATA

* CONTINUED ON PAGE 2

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START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 4.597 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -7.70E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.44E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.04E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED				
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 1.40E-02	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.230			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.414E 02	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.891E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811150730
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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.565	2.95	7.48	NO DATA	15.583	-1.018	-0.920	0.086	0.184

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.663	15.669	15.767	7.793E-03	62.44	6.310E-03	10.347	16.572	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.882 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.943

Z/L AT 10 METERS
-0.878

MONIN-OBUKHOV LENGTH (Meters)
-1.139E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.86E-03

HUMIDITY FLUX (Kg/sec m2)
2.14E-05

SEN. HEAT FLUX (Watts/m2)
5.59E 00

TOTAL HEAT FLUX (Watts/m2)
-1.57E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.486E-02

SCALING SPEC. HUMID. (Kg/Kg)
-2.049E-04

SCALING POT. TEMP. (Kelvin)
-5.304E-02

SCALING V. POT. TEMP. (Kelvin)
1.484E 00

ROUGHNESS LENGTH (Meters)
5.104E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.250E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.200E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.139E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
4.500E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.694

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.328E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151301
START TIME: 13: 1: 0 PST
END TIME: 13:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 29 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.822	4.915	2.068	1.962	5.263	4.131	4.837

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.829	4.191	2.460	0.000	0.000	0.000	0.000	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 147150	1421 149246

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	174	0	0	0	0	0	114.6	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.715	4.01	8.78	NO DATA	309.5	1020.0	5.76E 02	15.829	287.980

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.925	3.94	9.06	NO DATA	-0.27

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.896	15.922	16.103	8.511E-03	67.57	6.895E-03	11.307	16.733	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.986	16.155	16.216	8.666E-03	67.93	7.025E-03	11.522	16.961	NO DATA

* CONTINUED ON PAGE 2

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NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 29 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) -5.328 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.59E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -1.32E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -9.07E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED		ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= -1.15E-02	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS			
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.229	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415E 02			
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.889E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) <-2.0; functional limitation exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151301
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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 29 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.832	3.97	8.93	NO DATA		15.829	-0.997	-0.899	0.222	0.320
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.930	16.051	16.149	8.593E-03	67.74	6.964E-03	11.421	16.860	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.371 AT GMH	-1.72E-02	1.184E-01	1.403E-02	1.229
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
10.75	2.56E-05	-1.757E-04	2.557E-05	2.415E 02
Z/L AT GMH	SEN. HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	WITH POT. TEMPERATURE (Meter Kel./sec)	WATER LAT. HEAT VAP. (ITcal./Kg)
-0.407	6.56E 00	-4.459E-02	5.281E-03	5.889E 05
Z/L AT 10 METERS	TOTAL HEAT FLUX (Watts/m2)	SCALING V. POT. TEMP. (Kelvin)		VAP. PRES. AT WT LEVEL (Millibar)
-0.378	-5.06E 02	3.442E 00		17.975
MONIN-OBUKHOV LENGTH (Meters)		ROUGHNESS LENGTH (Meters)		ABS. HUMID. AT WT LEVEL (Kg/m3)
-2.643E 01		8.126E-05		1.348E-02
		DRAG COEF. AT 10 METERS (Dimensionless)		
		8.918E-04		

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151330
START TIME: 13:30: 0 PST
END TIME: 13:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.725	4.829	2.771	2.638	5.253	3.770	4.954

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.757	4.217	2.464	0.000	0.000	0.000	0.000	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 147125	1421 148722

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.712	5.40	8.22	NO DATA	313.4	1019.9	5.26E 02	15.757	287.952

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.872	5.26	8.55	NO DATA	-0.47

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.893	15.874	16.055	8.192E-03	65.05	6.637E-03	10.883	16.731	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.934	16.061	16.122	8.374E-03	65.85	6.789E-03	11.132	16.904	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151330
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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973).

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.724 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.777

Z/L AT 10 METERS
-0.723

Z/L AT Z1
-1.335

Z/L AT Z2
-0.453

MONIN-OBUKHOV LENGTH
(Meters)
-1.383E 01

PSI1 AT Z1= 1.232795
PSI1 AT Z2= 0.725765
PSI2 AT Z1= 0.834431
PSI2 AT Z2= 0.486280

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-8.55E-03

HUMIDITY FLUX
(Kg/sec m2)
1.00E-05

SEN. HEAT FLUX
(Watts/m2)
2.69E 00

TOTAL HEAT FLUX
(Watts/m2)
-4.98E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.889E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.340E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-9.797E-05

SCALING POT. TEMP.
(Kelvin)
-2.599E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.356E-02

ROUGHNESS LENGTH
(Meters)
2.092E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
6.956E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.38E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.53E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.05E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.79E-03 .

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.20E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -4.83E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.82E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.09E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151330
PAGE: 3
START TIME: 13:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.802	5.31	8.40	NO DATA		15.757	-0.955	-0.857	0.221	0.319
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.900	15.978	16.076	8.288E-03	65.46	6.717E-03	11.014	16.827	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.151 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.172

Z/L AT 10 METERS
-0.160

MONIN-OBUKHOV LENGTH (Meters)
-6.247E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.40E-02

HUMIDITY FLUX (Kg/sec m2)
3.60E-05

SEN. HEAT FLUX (Watts/m2)
7.69E 00

TOTAL HEAT FLUX (Watts/m2)
-4.29E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.664E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.760E-04

SCALING POT. TEMP. (Kelvin)
-3.721E-02

SCALING V. POT. TEMP. (Kelvin)
2.077E 00

ROUGHNESS LENGTH (Meters)
1.400E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.806E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.768E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.598E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.191E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.889E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.893

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.342E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151400
START TIME: 14: 0: 0 PST
END TIME: 14:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.591	4.721	3.394	3.171	5.245	3.334	4.965

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.686	4.205	2.462	0.000	0.000	0.000	0.000	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 147875	1421 149134

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.787	6.60	7.43	NO DATA	313.8	1019.8	4.65E 02	15.686	288.010

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.913	6.28	7.90	NO DATA	-0.63

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.968	15.889	16.069	7.760E-03	61.34	6.289E-03	10.312	16.812	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.975	16.051	16.113	8.012E-03	62.85	6.497E-03	10.652	16.949	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151400
PAGE: 2
START TIME: 14: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.022 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.028

Z/L AT 10 METERS
-0.026

Z/L AT Z1
-0.047

Z/L AT Z2
-0.016

MONIN-OBUKHOV LENGTH
(Meters)
-3.897E 02

PSI1 AT Z1= 0.148028
PSI1 AT Z2= 0.056169
PSI2 AT Z1= 0.092676
PSI2 AT Z2= 0.034321

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.54E-02

HUMIDITY FLUX
(Kg/sec m2)
1.32E-05

SEN. HEAT FLUX
(Watts/m2)
4.15E-01

TOTAL HEAT FLUX
(Watts/m2)
-4.32E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.889E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.120E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-9.588E-05

SCALING POT. TEMP.
(Kelvin)
-2.988E-03

SCALING V. POT. TEMP.
(Kelvin)
-2.000E-02

ROUGHNESS LENGTH
(Meters)
1.920E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
1.253E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.18E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -2.09E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.50E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.35E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.13E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -4.93E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.58E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.36E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151400
PAGE: 3 E-O MET/OSP PRINT DATE: 5 APR 1979
START TIME: 14: 0: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 15 Nov 1978 (DAY 319) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.858	6.41	7.68	NO DATA		15.686	-0.828	-0.730	0.292	0.390
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.956	15.978	16.076	7.893E-03	62.12	6.399E-03	10.491	16.888	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.076 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.090

Z/L AT 10 METERS
-0.084

MONIN-OBUKHOV LENGTH (Meters)
-1.198E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.31E-02

HUMIDITY FLUX (Kg/sec m2)
4.63E-05

SEN. HEAT FLUX (Watts/m2)
7.83E 00

TOTAL HEAT FLUX (Watts/m2)
-3.43E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.079E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.811E-04

SCALING POT. TEMP. (Kelvin)
-3.033E-02

SCALING V. POT. TEMP. (Kelvin)
1.329E 00

ROUGHNESS LENGTH (Meters)
2.068E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.053E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.323E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.626E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.305E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.889E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.812

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.336E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151430
START TIME: 14:30: 0 PST
END TIME: 14:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.498	4.636	3.731	3.455	5.242	2.811	5.049

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.614	4.209	2.465	0.000	0.000	0.000	0.000	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 148609	1421 149682

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.861	7.25	6.89	NO DATA		316.7	1019.7	3.92E 02	15.614	288.075

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)
14.968	6.83	7.40	NO DATA		-0.77

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	15.042	15.922	16.103	7.475E-03	58.82	6.060E-03	9.936	16.892	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	15.030	16.068	16.129	7.738E-03	60.49	6.276E-03	10.289	17.009	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151430
PAGE: 2
START TIME: 14:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.023 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
0.035

Z/L AT 10 METERS
0.032

Z/L AT Z1
0.060

Z/L AT Z2
0.020

MONIN-OBUKHOV LENGTH
(Meters)
3.098E 02

PSI1 AT Z1= -0.279875
PSI1 AT Z2= -0.094930
PSI2 AT Z1= -0.378209
PSI2 AT Z2= -0.128284

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.66E-02

HUMIDITY FLUX
(Kg/sec m2)
1.09E-05

SEN. HEAT FLUX
(Watts/m2)
-6.21E-01

TOTAL HEAT FLUX
(Watts/m2)
-3.66E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.889E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.161E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-7.653E-05

SCALING POT. TEMP.
(Kelvin)
4.311E-03

SCALING V. POT. TEMP.
(Kelvin)
-9.236E-03

ROUGHNESS LENGTH
(Meters)
6.483E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.348E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.23E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -2.17E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 1.22E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.62E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.01E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -6.18E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= 1.10E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -5.12E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151430
PAGE: 3
START TIME: 14:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.921	6.99	7.16	NO DATA		15.614	-0.693	-0.595	0.388	0.486
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	15.019	16.002	16.100	7.613E-03	59.69	6.174E-03	10.122	16.957	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.050 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.060

Z/L AT 10 METERS
-0.056

MONIN-OBUKHOV LENGTH (Meters)
-1.778E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.56E-02

HUMIDITY FLUX (Kg/sec m2)
5.25E-05

SEN. HEAT FLUX (Watts/m2)
7.24E 00

TOTAL HEAT FLUX (Watts/m2)
-2.55E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.311E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.850E-04

SCALING POT. TEMP. (Kelvin)
-2.523E-02

SCALING V. POT. TEMP. (Kelvin)
8.899E-01

ROUGHNESS LENGTH (Meters)
2.508E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.092E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.340E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.253E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
5.830E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.889E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.730

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.330E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151532
START TIME: 15:32: 0 PST
END TIME: 15:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.205	0.000	0.000	4.211	4.409	2.701	2.513	5.247	1.516	4.989

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.471	4.208	2.469	0.000	0.000	0.000	0.000	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 152265	1421 153216

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	168	0	0	0	0	0	114.7	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
15.227	5.26	5.20	NO DATA	314.6	1019.8	2.11E 02	15.471	288.434

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
15.322	5.01	6.04	NO DATA	-0.91

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	15.407	16.172	16.353	6.642E-03	51.12	5.392E-03	8.840	17.294	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	15.383	16.324	16.386	7.041E-03	53.87	5.717E-03	9.373	17.400	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151532
PAGE: 2
START TIME: 15:32: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.132 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
0.446

Z/L AT 10 METERS
0.415

Z/L AT Z1
0.765

Z/L AT Z2
0.259

MONIN-OBUKHOV LENGTH
(Meters)
2.412E 01

PSI1 AT Z1= -3.595226
PSI1 AT Z2= -1.219454
PSI2 AT Z1= -4.858414
PSI2 AT Z2= -1.647911

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.82E-04

HUMIDITY FLUX
(Kg/sec m2)
1.11E-06

SEN. HEAT FLUX
(Watts/m2)
-8.41E-02

TOTAL HEAT FLUX
(Watts/m2)
-2.09E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.887E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.524E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-3.583E-05

SCALING POT. TEMP.
(Kelvin)
2.686E-03

SCALING V. POT. TEMP.
(Kelvin)
-3.632E-03

ROUGHNESS LENGTH
(Meters)
1.248E-30

DRAG COEF. AT 10 METERS
(Dimensionless)
6.370E-06

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.51E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -3.27E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 2.45E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.32E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.39E 01

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.32E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= 1.76E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.30E 02

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151532
PAGE: 3
START TIME: 15:32: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
15.280	5.11	5.65	NO DATA		15.471	-0.191	-0.093	0.784	0.882
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	15.378	16.255	16.353	6.851E-03	52.56	5.562E-03	9.120	17.353	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.065 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.078

Z/L AT 10 METERS
-0.072

MONIN-OBUKHOV LENGTH (Meters)
-1.383E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.10E-02

HUMIDITY FLUX (Kg/sec m2)
4.27E-05

SEN. HEAT FLUX (Watts/m2)
3.02E 00

TOTAL HEAT FLUX (Watts/m2)
-1.03E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.589E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.191E-04

SCALING POT. TEMP. (Kelvin)
-1.535E-02

SCALING V. POT. TEMP. (Kelvin)
5.230E-01

ROUGHNESS LENGTH (Meters)
1.295E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.672E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.524E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.274E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
2.439E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.412E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.887E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.568

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.319E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151600
START TIME: 16: 0: 0 PST
END TIME: 16:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	3.797	4.061	2.767	2.571	5.251	0.873	5.108

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.400	4.182	2.466	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 155189	1421 155865

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
15.519	5.39	2.72	NO DATA	318.7	1019.9	1.22E 02	15.400	288.713

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
15.587	5.13	3.96	NO DATA	-0.91

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	15.700	16.314	16.495	5.576E-03	42.16	4.530E-03	7.429	17.622	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	15.648	16.455	16.516	6.084E-03	45.81	4.945E-03	8.108	17.698	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151600
PAGE: 2
START TIME: 16: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 0.264 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.58E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -4.17E-05	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 5.22E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED		ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= -2.12E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS			
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.227	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.410E 02			
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.885E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151600
PAGE: 3
START TIME: 16: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
15.557	5.23	3.38	NO DATA		15.400	0.157	0.255	0.990	1.088
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	15.655	16.390	16.488	5.841E-03	44.06	4.746E-03	7.783	17.664	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.018 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.023

Z/L AT 10 METERS
-0.021

MONIN-OBUKHOV LENGTH (Meters)
-4.735E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.27E-02

HUMIDITY FLUX (Kg/sec m2)
5.03E-05

SEN. HEAT FLUX (Watts/m2)
9.60E-01

TOTAL HEAT FLUX (Watts/m2)
3.28E 00

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.633E-01

SCALING SPEC. HUMID. (Kg/Kg)
-2.512E-04

SCALING POT. TEMP. (Kelvin)
-4.745E-03

SCALING V. POT. TEMP. (Kelvin)
-1.621E-02

ROUGHNESS LENGTH (Meters)
1.357E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.752E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.668E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.034E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.749E-04

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.410E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.885E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.488

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.313E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151630
START TIME: 16:30: 0 PST
END TIME: 16:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.400	4.540	3.243	3.013	5.248	0.295	4.937

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.333	4.160	2.466	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 146568	1421 147731

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.16

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.657	6.31	6.33	NO DATA	312.8	1019.8	4.12E 01	15.333	287.875

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.773	5.98	6.83	NO DATA	-0.87

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.838	15.677	15.858	7.199E-03	57.36	5.832E-03	9.562	16.671	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.834	15.829	15.891	7.446E-03	58.90	6.034E-03	9.894	16.796	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151630
PAGE: 2
START TIME: 16:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.010 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
0.014

Z/L AT 10 METERS
0.013

Z/L AT Z1
0.024

Z/L AT Z2
0.008

MONIN-OBUKHOV LENGTH
(Meters)
7.581E 02

PSI1 AT Z1= -0.114387
PSI1 AT Z2= -0.038799
PSI2 AT Z1= -0.154577
PSI2 AT Z2= -0.052431

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.21E-02

HUMIDITY FLUX
(Kg/sec m2)
9.86E-06

SEN. HEAT FLUX
(Watts/m2)
-1.58E-01

TOTAL HEAT FLUX
(Watts/m2)
-1.70E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.890E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.927E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-8.077E-05

SCALING POT. TEMP.
(Kelvin)
1.284E-03

SCALING V. POT. TEMP.
(Kelvin)
-1.302E-02

ROUGHNESS LENGTH
(Meters)
4.183E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
9.854E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.30E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -2.03E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 3.23E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.28E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.53E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.86E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= 3.68E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.63E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151630
PAGE: 3
START TIME: 16:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.722	6.11	6.59	NO DATA		15.333	-0.611	-0.513	0.428	0.526
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.820	15.761	15.859	7.329E-03	58.16	5.939E-03	9.737	16.741	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.069 AT GMH	-4.74E-02	1.963E-01	3.855E-02	1.230
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
10.75	4.64E-05	-1.920E-04	4.636E-05	2.413E 02
Z/L AT GMH	SEN. HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	WITH POT. TEMPERATURE (Meter Kel./sec)	WATER LAT. HEAT VAP. (ITcal./Kg)
-0.083	6.07E 00	-2.488E-02	4.885E-03	5.890E 05
Z/L AT 10 METERS	TOTAL HEAT FLUX (Watts/m2)	SCALING V. POT. TEMP. (Kelvin)		VAP. PRES. AT WT LEVEL (Millibar)
-0.077	7.92E 01	-3.249E-01		17.413
MONIN-OBUKHOV LENGTH (Meters)		ROUGHNESS LENGTH (Meters)		ABS. HUMID. AT WT LEVEL (Kg/m3)
-1.301E 02		1.866E-04		1.308E-02
		DRAG COEF. AT 10 METERS (Dimensionless)		
		1.033E-03		

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151700
START TIME: 17: 0: 0 PST
END TIME: 17:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.480	4.601	3.178	2.987	5.259	0.084	4.928

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.267	4.170	2.458	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143565	1421 144786

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.17

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.356	6.18	6.80	NO DATA	312.5	1020.0	1.17E 01	15.267	287.578

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.479	5.93	7.19	NO DATA	-0.79

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.537	15.410	15.590	7.445E-03	60.42	6.024E-03	9.879	16.350	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.540	15.560	15.622	7.641E-03	61.55	6.185E-03	10.143	16.480	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151700
PAGE: 2
START TIME: 17: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.014 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.018

Z/L AT 10 METERS
-0.017

Z/L AT Z1
-0.031

Z/L AT Z2
-0.010

MONIN-OBUKHOV LENGTH
(Meters)
-5.974E 02

PSI1 AT Z1= 0.102102
PSI1 AT Z2= 0.037495
PSI2 AT Z1= 0.063199
PSI2 AT Z2= 0.022779

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-9.25E-03

HUMIDITY FLUX
(Kg/sec m2)
7.82E-06

SEN. HEAT FLUX
(Watts/m2)
1.28E-01

TOTAL HEAT FLUX
(Watts/m2)
7.76E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.667E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-7.327E-05

SCALING POT. TEMP.
(Kelvin)
-1.189E-03

SCALING V. POT. TEMP.
(Kelvin)
-1.421E-02

ROUGHNESS LENGTH
(Meters)
2.557E-10

DRAG COEF. AT 10 METERS
(Dimensionless)
7.511E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.53E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.62E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.63E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.15E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.04E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -6.46E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.98E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.33E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151700
PAGE: 3
START TIME: 17: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.425	6.03	7.01	NO DATA		15.267	-0.842	-0.744	0.226	0.324
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.523	15.493	15.591	7.549E-03	61.01	6.109E-03	10.019	16.422	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.093 AT GMH	-4.60E-02	1.933E-01	3.736E-02	1.231
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
10.75	4.36E-05	-1.832E-04	4.359E-05	2.413E 02
Z/L AT GMH	SEN. HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	WITH POT. TEMPERATURE (Meter Kel./sec)	WATER LAT. HEAT VAP. (ITcal./Kg)
-0.109	7.62E 00	-3.171E-02	6.129E-03	5.892E 05
Z/L AT 10 METERS	TOTAL HEAT FLUX (Watts/m2)	SCALING V. POT. TEMP. (Kelvin)		VAP. PRES. AT WT LEVEL (Millibar)
-0.101	1.03E 02	-4.305E-01		17.339
MONIN-OBUKHOV LENGTH (Meters)		ROUGHNESS LENGTH (Meters)		ABS. HUMID. AT WT LEVEL (Kg/m3)
-9.883E 01		1.815E-04		1.303E-02
		DRAG COEF. AT 10 METERS (Dimensionless)		
		1.028E-03		

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151730
START TIME: 17:30: 0 PST
END TIME: 17:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.517	4.641	3.529	3.282	5.269	0.079	4.808

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.200	4.189	2.454	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142264	1421 143638

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.226	6.86	7.02	NO DATA	308.5	1020.1	1.10E 01	15.200	287.455

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.364	6.50	7.43	NO DATA	-0.68

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.407	15.295	15.475	7.560E-03	61.84	6.113E-03	10.026	16.213	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.425	15.463	15.524	7.769E-03	63.02	6.286E-03	10.309	16.358	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151730
PAGE: 2
START TIME: 17:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.046 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.056

Z/L AT 10 METERS
-0.052

Z/L AT Z1
-0.096

Z/L AT Z2
-0.032

MONIN-OBUKHOV LENGTH
(Meters)
-1.928E 02

PSI1 AT Z1= 0.261227
PSI1 AT Z2= 0.106684
PSI2 AT Z1= 0.167305
PSI2 AT Z2= 0.066114

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.33E-02

HUMIDITY FLUX
(Kg/sec m2)
1.41E-05

SEN. HEAT FLUX
(Watts/m2)
1.48E 00

TOTAL HEAT FLUX
(Watts/m2)
2.53E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.375E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-8.329E-05

SCALING POT. TEMP.
(Kelvin)
-8.645E-03

SCALING V. POT. TEMP.
(Kelvin)
-2.345E-02

ROUGHNESS LENGTH
(Meters)
4.416E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
1.890E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.66E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.74E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.80E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.89E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.55E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.68E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -5.47E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.02E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151730
PAGE: 3
START TIME: 17:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.303	6.64	7.23	NO DATA		15.200	-0.897	-0.799	0.187	0.285
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.401	15.387	15.485	7.670E-03	62.45	6.204E-03	10.176	16.294	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.073 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.086

Z/L AT 10 METERS
-0.080

MONIN-OBUKHOV LENGTH (Meters)
-1.245E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.80E-02

HUMIDITY FLUX (Kg/sec m2)
4.65E-05

SEN. HEAT FLUX (Watts/m2)
8.56E 00

TOTAL HEAT FLUX (Watts/m2)
1.12E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.170E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.739E-04

SCALING POT. TEMP. (Kelvin)
-3.171E-02

SCALING V. POT. TEMP. (Kelvin)
-4.156E-01

ROUGHNESS LENGTH (Meters)
2.235E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.068E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.709E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.648E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.881E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.265

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.297E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151800
START TIME: 18: 0: 0 PST
END TIME: 18:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.547	4.660	3.956	3.686	5.281	0.080	4.822

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.133	4.123	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140271	1421 141772

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.12

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.027	7.69	7.19	NO DATA	308.9	1020.3	1.11E 01	15.133	287.262

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.177	7.28	7.54	NO DATA	-0.54

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.208	15.107	15.288	7.654E-03	63.39	6.184E-03	10.145	16.005	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.239	15.284	15.345	7.835E-03	64.29	6.334E-03	10.390	16.161	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151800
PAGE: 2
START TIME: 18: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.062 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.074

Z/L AT 10 METERS
-0.069

Z/L AT Z1
-0.127

Z/L AT Z2
-0.043

MONIN-OBUKHOV LENGTH
(Meters)
-1.448E 02

PSI1 AT Z1= 0.323367
PSI1 AT Z2= 0.136960
PSI2 AT Z1= 0.209147
PSI2 AT Z2= 0.085523

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.16E-02

HUMIDITY FLUX
(Kg/sec m2)
1.46E-05

SEN. HEAT FLUX
(Watts/m2)
3.02E 00

TOTAL HEAT FLUX
(Watts/m2)
2.79E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.233

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.600E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-7.386E-05

SCALING POT. TEMP.
(Kelvin)
-1.515E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.833E-02

ROUGHNESS LENGTH
(Meters)
8.421E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.561E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.12E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.50E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.09E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.77E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.19E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -6.40E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.12E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.67E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151800
PAGE: 3
START TIME: 18: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.111	7.44	7.38	NO DATA		15.133	-1.022	-0.924	0.072	0.170
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.209	15.205	15.303	7.750E-03	63.85	6.263E-03	10.274	16.092	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.057 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.069

Z/L AT 10 METERS
-0.064

MONIN-OBUKHOV LENGTH (Meters)
-1.553E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.64E-02

HUMIDITY FLUX (Kg/sec m2)
5.08E-05

SEN. HEAT FLUX (Watts/m2)
1.04E 01

TOTAL HEAT FLUX (Watts/m2)
1.24E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.489E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.654E-04

SCALING POT. TEMP. (Kelvin)
-3.343E-02

SCALING V. POT. TEMP. (Kelvin)
-4.015E-01

ROUGHNESS LENGTH (Meters)
2.881E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.121E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.197E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.075E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.322E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.190

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.292E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151900
START TIME: 19: 0: 0 PST
END TIME: 19:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.595	4.705	3.833	3.586	5.327	0.083	4.905

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.049	2.467	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 137780	1421 139490

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.7	60.05

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.778	7.45	7.46	NO DATA	311.8	1021.0	1.16E 01	15.000	287.023

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.949	7.08	7.81	NO DATA	-0.22

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.959	14.877	15.057	7.806E-03	65.64	6.297E-03	10.337	15.748	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.010	15.074	15.136	7.987E-03	66.46	6.447E-03	10.583	15.924	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151900
PAGE: 2
START TIME: 19: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.130 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.150

Z/L AT 10 METERS
-0.139

Z/L AT Z1
-0.257

Z/L AT Z2
-0.087

MONIN-OBUKHOV LENGTH
(Meters)
-7.183E 01

PSI1 AT Z1= 0.519545
PSI1 AT Z2= 0.243057
PSI2 AT Z1= 0.343533
PSI2 AT Z2= 0.155172

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.12E-02

HUMIDITY FLUX
(Kg/sec m2)
1.56E-05

SEN. HEAT FLUX
(Watts/m2)
5.40E 00

TOTAL HEAT FLUX
(Watts/m2)
3.23E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.235

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.589E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-7.945E-05

SCALING POT. TEMP.
(Kelvin)
-2.725E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.147E-02

ROUGHNESS LENGTH
(Meters)
1.199E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2.525E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.68E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.51E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.18E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.88E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.20E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.95E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.74E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.14E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151900
PAGE: 3
START TIME: 19: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.873	7.23	7.65	NO DATA		15.000	-1.127	-1.029	-0.014	0.084
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.971	14.986	15.084	7.901E-03	66.05	6.376E-03	10.467	15.846	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.068 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.082

Z/L AT 10 METERS
-0.076

MONIN-OBUKHOV LENGTH (Meters)
-1.316E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.14E-02

HUMIDITY FLUX (Kg/sec m2)
4.69E-05

SEN. HEAT FLUX (Watts/m2)
1.10E 01

TOTAL HEAT FLUX (Watts/m2)
1.15E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.404E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.580E-04

SCALING POT. TEMP. (Kelvin)
-3.676E-02

SCALING V. POT. TEMP. (Kelvin)
-3.839E-01

ROUGHNESS LENGTH (Meters)
2.700E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.107E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.781E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.688E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.839E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.234

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811151930
START TIME: 19:30: 0 PST
END TIME: 19:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.613	4.724	3.830	3.586	5.343	0.085	4.894

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.950	4.083	2.466	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 137817	1421 139513

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.7	60.08

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.782	7.44	7.57	NO DATA	311.4	1021.3	1.19E 01	14.950	287.027

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.951	7.08	7.92	NO DATA	-0.06

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.962	14.888	15.069	7.863E-03	66.10	6.341E-03	10.412	15.752	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.013	15.085	15.146	8.048E-03	66.95	6.494E-03	10.663	15.926	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811151930
PAGE: 2
START TIME: 19:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.131 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.150

Z/L AT 10 METERS
-0.140

Z/L AT Z1
-0.258

Z/L AT Z2
-0.087

MONIN-OBUKHOV LENGTH
(Meters)
-7.161E 01

PSI1 AT Z1= 0.520510
PSI1 AT Z2= 0.243615
PSI2 AT Z1= 0.344199
PSI2 AT Z2= 0.155543

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.03E-02

HUMIDITY FLUX
(Kg/sec m2)
1.57E-05

SEN. HEAT FLUX
(Watts/m2)
5.20E 00

TOTAL HEAT FLUX
(Watts/m2)
3.20E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.235

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.567E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-8.099E-05

SCALING POT. TEMP.
(Kelvin)
-2.658E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.107E-02

ROUGHNESS LENGTH
(Meters)
9.688E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.456E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.62E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.54E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.05E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.80E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.23E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.84E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.78E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.15E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811151930
PAGE: 3
START TIME: 19:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.876	7.22	7.76	NO DATA		14.950	-1.074	-0.976	0.047	0.145
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.974	14.997	15.095	7.960E-03	66.53	6.422E-03	10.545	15.849	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.066 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.078

Z/L AT 10 METERS
-0.073

MONIN-OBUKHOV LENGTH (Meters)
-1.369E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.13E-02

HUMIDITY FLUX (Kg/sec m2)
4.59E-05

SEN. HEAT FLUX (Watts/m2)
1.06E 01

TOTAL HEAT FLUX (Watts/m2)
1.12E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.403E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.548E-04

SCALING POT. TEMP. (Kelvin)
-3.531E-02

SCALING V. POT. TEMP. (Kelvin)
-3.738E-01

ROUGHNESS LENGTH (Meters)
2.697E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.107E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.775E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.593E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
8.485E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.235

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
16.989

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.278E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811152000
START TIME: 20: 0: 0 PST
END TIME: 20:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.553	4.660	3.981	3.736	5.360	0.084	4.903

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
4.975	4.089	2.463	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411.137523	1421 139212

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.09

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.752	7.73	7.20	NO DATA	311.7	1021.5	1.18E 01	14.975	286.997

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.921	7.37	7.54	NO DATA	0.09

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.933	14.831	15.012	7.669E-03	64.59	6.182E-03	10.154	15.722	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.983	15.026	15.087	7.844E-03	65.38	6.327E-03	10.392	15.895	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811152000
PAGE: 2
START TIME: 20: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.128 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.147

Z/L AT 10 METERS
-0.137

Z/L AT Z1
-0.252

Z/L AT Z2
-0.086

MONIN-OBUKHOV LENGTH
(Meters)
-7.314E 01

PSI1 AT Z1= 0.513670
PSI1 AT Z2= 0.239667
PSI2 AT Z1= 0.339477
PSI2 AT Z2= 0.152913

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.04E-02

HUMIDITY FLUX
(Kg/sec m2)
1.49E-05

SEN. HEAT FLUX
(Watts/m2)
5.12E 00

TOTAL HEAT FLUX
(Watts/m2)
3.00E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.235

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.568E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-7.668E-05

SCALING POT. TEMP.
(Kelvin)
-2.614E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.986E-02

ROUGHNESS LENGTH
(Meters)
5.105E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.458E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.64E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.46E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.98E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.59E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.23E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -6.17E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.81E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.19E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152000
PAGE: 3
START TIME: 20: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.846	7.51	7.38	NO DATA		14.975	-1.129	-1.031	-0.036	0.062
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.944	14.939	15.037	7.761E-03	64.99	6.259E-03	10.280	15.818	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.061 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.073

Z/L AT 10 METERS
-0.068

MONIN-OBUKHOV LENGTH (Meters)
-1.470E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.85E-02

HUMIDITY FLUX (Kg/sec m2)
4.99E-05

SEN. HEAT FLUX (Watts/m2)
1.14E 01

TOTAL HEAT FLUX (Watts/m2)
1.23E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.521E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.604E-04

SCALING POT. TEMP. (Kelvin)
-3.619E-02

SCALING V. POT. TEMP. (Kelvin)
-3.905E-01

ROUGHNESS LENGTH (Meters)
2.951E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.126E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.356E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.994E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.124E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.235

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.016

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.280E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811152030
START TIME: 20:30: 0 PST
END TIME: 20:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.517	4.628	3.910	3.661	5.371	0.084	4.961

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.110	2.463	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 136964	1421 138724

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.11

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.696	7.60	6.98	NO DATA	313.7	1021.7	1.17E 01	15.000	286.944

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.872	7.23	7.35	NO DATA	0.23

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.877	14.758	14.939	7.555E-03	63.85	6.089E-03	10.002	15.665	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.934	14.962	15.023	7.743E-03	64.73	6.244E-03	10.256	15.845	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811152030
PAGE: 2
START TIME: 20:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.139 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.159

Z/L AT 10 METERS
-0.148

Z/L AT Z1
-0.273

Z/L AT Z2
-0.093

MONIN-OBUKHOV LENGTH
(Meters)
-6.751E 01

PSI1 AT Z1= 0.540044
PSI1 AT Z2= 0.254980
PSI2 AT Z1= 0.357693
PSI2 AT Z2= 0.163128

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.28E-02

HUMIDITY FLUX
(Kg/sec m2)
1.66E-05

SEN. HEAT FLUX
(Watts/m2)
6.13E 00

TOTAL HEAT FLUX
(Watts/m2)
3.55E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.629E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-8.265E-05

SCALING POT. TEMP.
(Kelvin)
-3.015E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.492E-02

ROUGHNESS LENGTH
(Meters)
1.302E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2.654E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.73E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.56E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.69E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -8.47E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.15E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.72E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.57E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.05E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152030
PAGE: 3
START TIME: 20:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.794	7.37	7.18	NO DATA		15.000	-1.206	-1.108	-0.129	-0.031
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.892	14.871	14.969	7.654E-03	64.30	6.170E-03	10.136	15.765	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.068 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.082

Z/L AT 10 METERS
-0.076

MONIN-OBUKHOV LENGTH (Meters)
-1.315E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.50E-02

HUMIDITY FLUX (Kg/sec m2)
5.02E-05

SEN. HEAT FLUX (Watts/m2)
1.19E 01

TOTAL HEAT FLUX (Watts/m2)
1.24E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.463E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.650E-04

SCALING POT. TEMP. (Kelvin)
-3.861E-02

SCALING V. POT. TEMP. (Kelvin)
-4.037E-01

ROUGHNESS LENGTH (Meters)
2.825E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.117E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.068E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.023E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
9.511E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811152100
START TIME: 21: 0: 0 PST
END TIME: 21:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.462	4.590	4.290	4.002	5.378	0.083	4.915

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.137	2.460	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 136780	1421 138586

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.678	8.33	6.65	NO DATA	312.1	1021.8	1.16E 01	15.000	286.928

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.859	7.88	7.12	NO DATA	0.33

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.859	14.716	14.896	7.384E-03	62.47	5.950E-03	9.775	15.646	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.920	14.931	14.993	7.624E-03	63.79	6.147E-03	10.098	15.831	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811152100
PAGE: 2
START TIME: 21: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.102 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.119

Z/L AT 10 METERS
-0.111

Z/L AT Z1
-0.205

Z/L AT Z2
-0.069

MONIN-OBUKHOV LENGTH
(Meters)
-9.015E 01

PSI1 AT Z1= 0.448858
PSI1 AT Z2= 0.203103
PSI2 AT Z1= 0.294830
PSI2 AT Z2= 0.128683

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.37E-02

HUMIDITY FLUX
(Kg/sec m2)
2.37E-05

SEN. HEAT FLUX
(Watts/m2)
7.41E 00

TOTAL HEAT FLUX
(Watts/m2)
5.42E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.881E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.018E-04

SCALING POT. TEMP.
(Kelvin)
-3.155E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.965E-02

ROUGHNESS LENGTH
(Meters)
3.010E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.538E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.52E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.98E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.14E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -9.67E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.86E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -4.65E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.50E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.53E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152100
PAGE: 3
START TIME: 21: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.779	8.06	6.90	NO DATA		15.000	-1.221	-1.123	-0.165	-0.067
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.877	14.835	14.933	7.510E-03	63.15	6.054E-03	9.945	15.749	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.053 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.064

Z/L AT 10 METERS
-0.060

MONIN-OBUKHOV LENGTH (Meters)
-1.679E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.33E-02

HUMIDITY FLUX (Kg/sec m2)
5.64E-05

SEN. HEAT FLUX (Watts/m2)
1.29E 01

TOTAL HEAT FLUX (Watts/m2)
1.41E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.747E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.662E-04

SCALING POT. TEMP. (Kelvin)
-3.760E-02

SCALING V. POT. TEMP. (Kelvin)
-4.099E-01

ROUGHNESS LENGTH (Meters)
3.472E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.162E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.545E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.644E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.033E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811152130
START TIME: 21:30: 0 PST
END TIME: 21:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.568	4.681	4.333	4.047	5.381	0.085	4.869

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.216	2.453	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135533	1421 137428

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.553	8.42	7.28	NO DATA	310.5	1021.9	1.18E 01	15.000	286.808

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.743	7.97	7.66	NO DATA	0.40

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.734	14.636	14.817	7.713E-03	65.76	6.212E-03	10.206	15.519	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.804	14.855	14.917	7.914E-03	66.69	6.378E-03	10.478	15.712	NO DATA

* CONTINUED ON PAGE 2

[redacted]

[redacted] 0 PST
[redacted] 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

[redacted] CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

[redacted] RICHARDSON NUMBER
[redacted] -=Unstable)
[redacted] AT GMH

[redacted] MEAN HEIGHT
[redacted] GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.139

Z/L AT 10 METERS
-0.129

Z/L AT Z1
-0.238

Z/L AT Z2
-0.081

MONIN-OBUKHOV LENGTH
(Meters)
-7.755E 01

PSI1 AT Z1= 0.494923
PSI1 AT Z2= 0.228932
PSI2 AT Z1= 0.326544
PSI2 AT Z2= 0.145776

FLUX PARAMETERS
(+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.49E-02

HUMIDITY FLUX
(Kg/sec m2)
2.05E-05

SEN. HEAT FLUX
(Watts/m2)
8.76E 00

TOTAL HEAT FLUX
(Watts/m2)
4.77E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.907E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-8.711E-05

SCALING POT. TEMP.
(Kelvin)
-3.679E-02

SCALING V. POT. TEMP.
(Kelvin)
-5.236E-02

ROUGHNESS LENGTH
(Meters)
3.152E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.639E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.47E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.67E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -7.05E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.00E-02

PROFILE SLOPES
(+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.84E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.43E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.29E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.03E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152130
PAGE: 3
START TIME: 21:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.659	8.14	7.48	NO DATA		15.000	-1.341	-1.243	-0.243	-0.145

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	13.757	14.757	14.855	7.819E-03	66.23	6.299E-03	10.349	15.626	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.056 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.067

Z/L AT 10 METERS
-0.063

MONIN-OBUKHOV LENGTH (Meters)
-1.593E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.58E-02

HUMIDITY FLUX (Kg/sec m2)
5.37E-05

SEN. HEAT FLUX (Watts/m2)
1.41E 01

TOTAL HEAT FLUX (Watts/m2)
1.35E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.783E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.561E-04

SCALING POT. TEMP. (Kelvin)
-4.066E-02

SCALING V. POT. TEMP. (Kelvin)
-3.882E-01

ROUGHNESS LENGTH (Meters)
3.560E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.168E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.744E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.373E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.131E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811152200
START TIME: 22: 0: 0 PST
END TIME: 22:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.591	4.694	3.734	3.492	5.375	0.086	4.851

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.247	2.451	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134514	1421 136366

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO *ENGINEERING UNITS*:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.25

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.451	7.26	7.41	NO DATA	309.9	1021.8	1.20E 01	15.000	286.704

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.637	6.90	7.75	NO DATA	0.43

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.632	14.544	14.725	7.786E-03	66.80	6.269E-03	10.298	15.417	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.698	14.755	14.816	7.961E-03	67.53	6.414E-03	10.537	15.604	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811152200
PAGE: 2
START TIME: 22: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0. 177 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10. 75

Z/L AT GMH
-0. 201

Z/L AT 10 METERS
-0. 187

Z/L AT Z1
-0. 344

Z/L AT Z2
-0. 117

MONIN-OBUKHOV LENGTH
(Meters)
-5. 358E 01

PSI1 AT Z1= 0. 620880
PSI1 AT Z2= 0. 303382
PSI2 AT Z1= 0. 413624
PSI2 AT Z2= 0. 195637

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3. 26E-02

HUMIDITY FLUX
(Kg/sec m2)
1. 60E-05

SEN. HEAT FLUX
(Watts/m2)
7. 31E 00

TOTAL HEAT FLUX
(Watts/m2)
3. 48E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1. 237

AIR SPECIFIC HEAT
(ITcal. /Kg Kel.)
2. 414E 02

WATER LAT. HEAT VAP.
(ITcal. /Kg)
5. 897E 03

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1. 622E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-7. 964E-05

SCALING POT. TEMP.
(Kelvin)
-3. 603E-02

SCALING V. POT. TEMP.
(Kelvin)
-5. 031E-02

ROUGHNESS LENGTH
(Meters)
2. 499E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2. 632E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3. 56E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1. 46E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6. 62E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -9. 24E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2. 16E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5. 94E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1. 31E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9. 40E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152200
PAGE: 3
START TIME: 22: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.555	7.04	7.59	NO DATA		15.000	-1.445	-1.347	-0.339	-0.241
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.653	14.661	14.759	7.878E-03	67.17	6.346E-03	10.424	15.521	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.093 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.109

Z/L AT 10 METERS
-0.101

MONIN-OBUKHOV LENGTH
(Meters)
-9.853E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.71E-02

HUMIDITY FLUX
(Kg/sec m2)
4.59E-05

SEN. HEAT FLUX
(Watts/m2)
1.34E 01

TOTAL HEAT FLUX
(Watts/m2)
1.15E 02

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.329E-01

SCALING SPEC. HUMID.
(Kg/Kg)
-1.593E-04

SCALING POT. TEMP.
(Kelvin)
-4.605E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.941E-01

ROUGHNESS LENGTH
(Meters)
2.546E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.095E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
5.426E-02

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
4.589E-05

WITH POT. TEMPERATURE
(Meter Kel./sec)
1.073E-02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.237

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL
(Millibar)
17.044

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811152230
START TIME: 22:30: 0 PST
END TIME: 22:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.577	4.682	3.597	3.378	5.379	0.086	4.902

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.259	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135085	1421 136902

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.26

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.508	6.99	7.32	NO DATA	311.7	1021.8	1.20E 01	15.000	286.759

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.690	6.68	7.67	NO DATA	0.42

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.689	14.594	14.775	7.736E-03	66.14	6.230E-03	10.235	15.474	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.752	14.803	14.865	7.921E-03	66.96	6.382E-03	10.485	15.658	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811152230
PAGE: 2
START TIME: 22:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.219 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.245

Z/L AT 10 METERS
-0.228

Z/L AT Z1
-0.420

Z/L AT Z2
-0.142

MONIN-OBUKHOV LENGTH
(Meters)
-4.393E 01

PSI1 AT Z1= 0.696054
PSI1 AT Z2= 0.350253
PSI2 AT Z1= 0.465700
PSI2 AT Z2= 0.227391

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.70E-02

HUMIDITY FLUX
(Kg/sec m2)
1.56E-05

SEN. HEAT FLUX
(Watts/m2)
6.44E 00

TOTAL HEAT FLUX
(Watts/m2)
3.30E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.237

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.476E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-8.561E-05

SCALING POT. TEMP.
(Kelvin)
-3.492E-02

SCALING V. POT. TEMP.
(Kelvin)
-5.024E-02

ROUGHNESS LENGTH
(Meters)
9.772E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.179E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.12E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.54E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.26E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -9.01E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.37E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.52E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.35E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.41E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152230
PAGE: 3
START TIME: 22:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.610	6.80	7.51	NO DATA		15.000	-1.390	-1.292	-0.290	-0.192
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.708	14.710	14.808	7.833E-03	66.56	6.310E-03	10.367	15.577	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.099 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.116

Z/L AT 10 METERS
-0.108

MONIN-OBUKHOV LENGTH (Meters)
-9.256E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.18E-02

HUMIDITY FLUX (Kg/sec m2)
4.48E-05

SEN. HEAT FLUX (Watts/m2)
1.26E 01

TOTAL HEAT FLUX (Watts/m2)
1.11E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.235E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.619E-04

SCALING POT. TEMP. (Kelvin)
-4.514E-02

SCALING V. POT. TEMP. (Kelvin)
-3.978E-01

ROUGHNESS LENGTH (Meters)
2.359E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.079E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.995E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.475E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.009E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.237

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811152300
START TIME: 23: 0: 0 PST
END TIME: 23:29:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.565	4.654	3.473	3.273	5.378	0.086	4.935

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.258	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135047	1421 136766

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.26

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.505	6.75	7.24	NO DATA	312.8	1021.8	1.20E 01	15.000	286.751

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.677	6.48	7.50	NO DATA	0.38

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.685	14.585	14.765	7.694E-03	65.80	6.196E-03	10.179	15.470	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.738	14.777	14.838	7.830E-03	66.26	6.309E-03	10.365	15.644	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811152300
PAGE: 2
START TIME: 23: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.241 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.268

Z/L AT 10 METERS
-0.250

Z/L AT Z1
-0.460

Z/L AT Z2
-0.156

MONIN-OBUKHOV LENGTH
(Meters)
-4.008E 01

PSI1 AT Z1= 0.732548
PSI1 AT Z2= 0.373609
PSI2 AT Z1= 0.490978
PSI2 AT Z2= 0.243296

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.14E-02

HUMIDITY FLUX
(Kg/sec m2)
1.05E-05

SEN. HEAT FLUX
(Watts/m2)
4.89E 00

TOTAL HEAT FLUX
(Watts/m2)
1.87E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.237

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.315E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-6.430E-05

SCALING POT. TEMP.
(Kelvin)
-2.974E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.132E-02

ROUGHNESS LENGTH
(Meters)
2.396E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
1.728E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.73E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.14E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.27E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.33E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.66E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -7.36E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.59E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.14E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152300
PAGE: 3
START TIME: 23: 0: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.600	6.59	7.38	NO DATA		15.000	-1.400	-1.302	-0.309	-0.211
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.698	14.691	14.789	7.766E-03	66.02	6.256E-03	10.278	15.567	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.110 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.128

Z/L AT 10 METERS
-0.119

MONIN-OBUKHOV LENGTH
(Meters)
-8.401E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.71E-02

HUMIDITY FLUX
(Kg/sec m2)
4.39E-05

SEN. HEAT FLUX
(Watts/m2)
1.24E 01

TOTAL HEAT FLUX
(Watts/m2)
1.09E 02

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.150E-01

SCALING SPEC. HUMID.
(Kg/Kg)
-1.652E-04

SCALING POT. TEMP.
(Kelvin)
-4.600E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.051E-01

ROUGHNESS LENGTH
(Meters)
2.197E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.065E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
4.620E-02

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
4.391E-05

WITH POT. TEMPERATURE
(Meter Kel. /sec)
9.888E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.237

AIR SPECIFIC HEAT
(ITcal. /Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal. /Kg)
5.896E 05

VAP. PRES. AT WT LEVEL
(Millibar)
17.044

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811152330
START TIME: 23:30: 0 PST
END TIME: 23:59:50 PST
START DATE: 15 Nov 1978 (DAY 319)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.626	4.706	2.925	2.798	5.369	0.087	4.842

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.223	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134721	1421 136277

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.472	5.69	7.60	NO DATA		309.6	1021.7	1.21E 01	15.000	286.710

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)
13.628	5.57	7.81	NO DATA		0.31

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.653	14.579	14.760	7.887E-03	67.58	6.351E-03	10.432	15.437	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.689	14.751	14.813	7.998E-03	67.88	6.444E-03	10.585	15.595	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811152330
PAGE: 2
START TIME: 23:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.752 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.806

Z/L AT 10 METERS
-0.750

Z/L AT Z1
-1.385

Z/L AT Z2
-0.470

MONIN-OBUKHOV LENGTH
(Meters)
-1.333E 01

PSI1 AT Z1= 1.252490
PSI1 AT Z2= 0.740630
PSI2 AT Z1= 0.847778
PSI2 AT Z2= 0.496575

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.58E-03

HUMIDITY FLUX
(Kg/sec m2)
5.83E-06

SEN. HEAT FLUX
(Watts/m2)
2.29E 00

TOTAL HEAT FLUX
(Watts/m2)
4.54E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.237

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.897E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
7.827E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-6.020E-05

SCALING POT. TEMP.
(Kelvin)
-2.337E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.425E-02

ROUGHNESS LENGTH
(Meters)
1.253E-10

DRAG COEF. AT 10 METERS
(Dimensionless)
6.126E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.28E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -9.35E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.63E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.32E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.47E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -7.86E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.02E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.38E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811152330
PAGE: 3
START TIME: 23:30: 0 PST
START DATE: 15 Nov 1978 (DAY 319)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 6 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.559	5.62	7.71	NO DATA		15.000	-1.441	-1.343	-0.325	-0.227
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.657	14.675	14.773	7.945E-03	67.72	6.400E-03	10.513	15.525	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.181 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.205

Z/L AT 10 METERS
-0.191

MONIN-OBUKHOV LENGTH (Meters)
-5.244E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.90E-02

HUMIDITY FLUX (Kg/sec m2)
3.61E-05

SEN. HEAT FLUX (Watts/m2)
1.12E 01

TOTAL HEAT FLUX (Watts/m2)
8.82E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.776E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.644E-04

SCALING POT. TEMP. (Kelvin)
-5.032E-02

SCALING V. POT. TEMP. (Kelvin)
-3.972E-01

ROUGHNESS LENGTH (Meters)
1.566E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.001E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.156E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.611E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.939E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.237

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

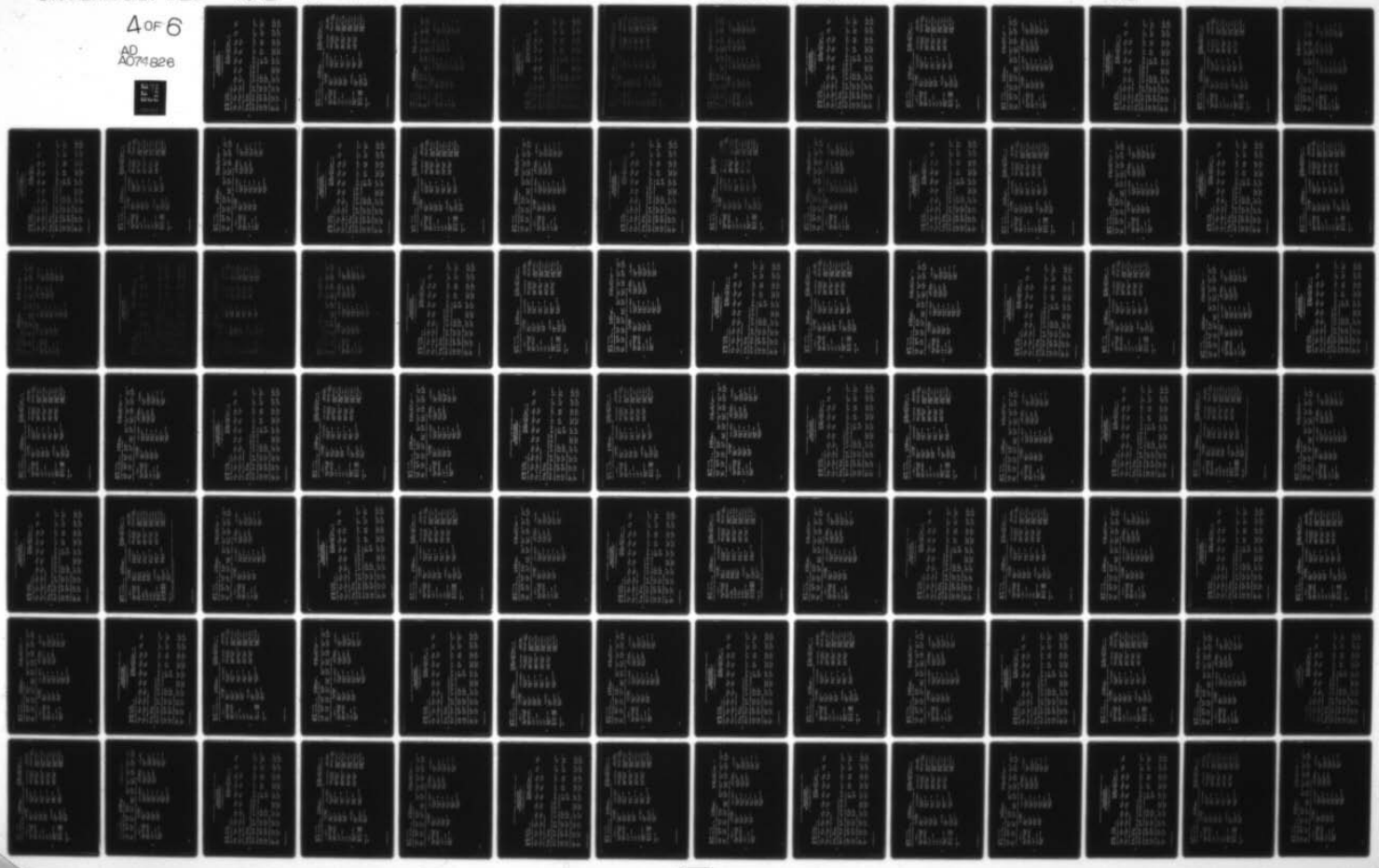
VAP. PRES. AT WT LEVEL (Millibar)
17.044

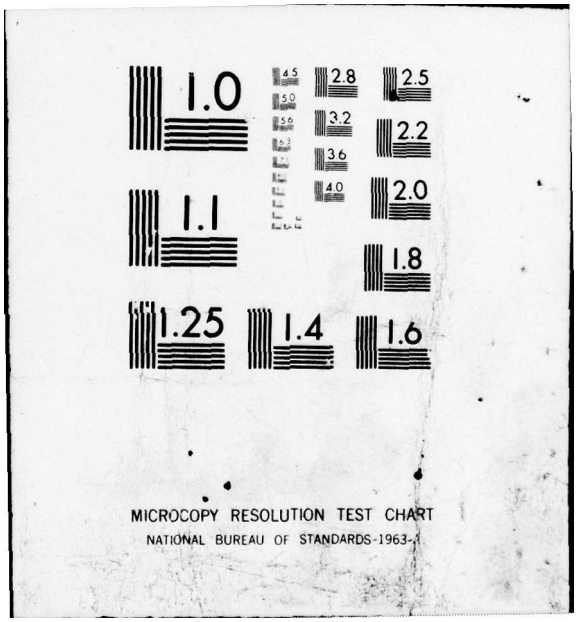
ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

AD-A074 826 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
MICROMETEOROLOGICAL DATA REPORT FOR THE NOVEMBER 1978 ELECTRO-O--ETC(U)
AUG 79 T V BLANC
UNCLASSIFIED NRL-MR-4056 SBIE-AD-E000 325 NL

4 OF 6
AD A074 826




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160000
START TIME: 0: 0: 0 PST
END TIME: 0:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.692	4.765	2.653	2.541	5.362	0.090	4.679

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.190	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135030	1421 136516

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.503	5.17	7.98	NO DATA	304.1	1021.6	1.26E 01	15.000	286.737

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.652	5.07	8.17	NO DATA	0.22

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.684	14.640	14.820	8.096E-03	69.24	6.521E-03	10.710	15.469	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.713	14.803	14.864	8.194E-03	69.44	6.604E-03	10.846	15.619	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160000
PAGE: 2
START TIME: 0: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.983 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-1.048

Z/L AT 10 METERS
-0.976

Z/L AT Z1
-1.800

Z/L AT Z2
-0.610

MONIN-OBUKHOV LENGTH
(Meters)
-1.025E 01

PSI1 AT Z1= 1.397102
PSI1 AT Z2= 0.851622
PSI2 AT Z1= 0.945287
PSI2 AT Z2= 0.573348

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.28E-03

HUMIDITY FLUX
(Kg/sec m2)
4.45E-06

SEN. HEAT FLUX
(Watts/m2)
1.59E 00

TOTAL HEAT FLUX
(Watts/m2)
1.25E-02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
6.537E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-5.509E-05

SCALING POT. TEMP.
(Kelvin)
-1.941E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.941E-02

ROUGHNESS LENGTH
(Meters)
1.354E-11

DRAG COEF. AT 10 METERS
(Dimensionless)
4.273E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.01E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.31E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.93E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.44E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 5.35E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -8.59E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.44E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.61E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160000
PAGE: 3
START TIME: 0: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.586	5.11	8.08	NO DATA		15.000	-1.414	-1.316	-0.270	-0.172
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.684	14.730	14.828	8.148E-03	69.33	6.565E-03	10.782	15.552	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.235 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.263

Z/L AT 10 METERS
-0.244

MONIN-OBUKHOV LENGTH (Meters)
-4.092E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.12E-02

HUMIDITY FLUX (Kg/sec m2)
3.15E-05

SEN. HEAT FLUX (Watts/m2)
1.02E 01

TOTAL HEAT FLUX (Watts/m2)
7.53E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.588E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.603E-04

SCALING POT. TEMP. (Kelvin)
-5.154E-02

SCALING V. POT. TEMP. (Kelvin)
-3.797E-01

ROUGHNESS LENGTH (Meters)
1.294E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.670E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.521E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.147E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.183E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

*** * * * MICROMETEOROLOGICAL DATA * * * ***

RUN NUMBER: 7811160030
START TIME: 0:30: 0 PST
END TIME: 0:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR
6.204	0.000	0.000	4.710	4.795	2.984	2.824	5.357	0.091	4.722

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.194	2.448	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP 2
1411 134723	1421 136378

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No >.005V)	ZERO REF. DEV (No.>.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.472	5.81	8.09	NO DATA	305.6	1021.5	1.28E 01	15.000	286.715

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.639	5.62	8.35	NO DATA	0.12

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.653	14.617	14.798	8.155E-03	69.88	6.568E-03	10.787	15.438	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.699	14.803	14.865	8.293E-03	70.34	6.683E-03	10.976	15.605	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160030
PAGE: 2
START TIME: 0:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE, 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973)

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.421 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.459

Z/L AT 10 METERS
-0.427

Z/L AT Z1
-0.788

Z/L AT Z2
-0.267

MONIN-OBUKHOV LENGTH
(Meters)
-2.341E 01

PSI1 AT Z1= 0.967999
PSI1 AT Z2= 0.932689
PSI2 AT Z1= 0.853559
PSI2 AT Z2= 0.352576

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.34E-02

HUMIDITY FLUX
(Kg/sec m2)
8.97E-06

SEN HEAT FLUX
(Watts/m2)
3.63E 00

TOTAL HEAT FLUX
(Watts/m2)
1.30E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.042E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-6.963E-05

SCALING POT. TEMP.
(Kelvin)
-2.791E-02

SCALING V.POT. TEMP.
(Kelvin)
-4.046E-02

ROUGHNESS LENGTH
(Meters)
4.973E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
1.085E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.93E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.16E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.63E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.72E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.36E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -6.79E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.69E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.17E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160030
PAGE: 3
START TIME: 0:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.565	5.69	8.23	NO DATA		15.000	-1.435	-1.337	-0.280	-0.182
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES (Millibars)**	**REF. INDEX (Kel xM-2/3)**
10.00	13.663	14.720	14.818	8.228E-03	70.10	6.629E-03	10.887	15.531	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.174 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.197

Z/L AT 10 METERS
-0.183

MONIN-OBUKHOV LENGTH
(Meters)
-5.460E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.03E-02

HUMIDITY FLUX
(Kg/sec m2)
3.45E-05

SEN. HEAT FLUX
(Watts/m2)
1.12E 01

TOTAL HEAT FLUX
(Watts/m2)
8.36E 01

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.805E-01

SCALING SPEC. HUMID.
(Kg/Kg)
-1.545E-04

SCALING POT. TEMP.
(Kelvin)
-4.988E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.707E-01

ROUGHNESS LENGTH
(Meters)
1.609E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.006E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
3.257E-02

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
3.447E-05

WITH POT. TEMPERATURE
(Meter Kel./sec)
9.002E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL
(Millibar)
17.044

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160100
START TIME: 1: 0: 0 PST
END TIME: 1:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.799	4.855	3.138	3.018	5.357	0.097	4.757

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.184	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134567	1421 136107

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.457	6.11	8.61	NO DATA	306.7	1021.5	1.35E 01	15.000	286.694

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.611	5.99	8.71	NO DATA	0.02

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.638	14.643	14.823	8.449E-03	72.47	6.805E-03	11.176	15.422	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.672	14.805	14.866	8.499E-03	72.21	6.849E-03	11.248	15.577	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160100
PAGE: 2
START TIME: 1: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.886 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.947

Z/L AT 10 METERS
-0.881

Z/L AT Z1
-1.626

Z/L AT Z2
-0.552

MONIN-OBUKHOV LENGTH
(Meters)
-1.135E 01

PSI1 AT Z1= 1.340295
PSI1 AT Z2= 0.807650
PSI2 AT Z1= 0.907087
PSI2 AT Z2= 0.542957

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.62E-03

HUMIDITY FLUX
(Kg/sec m2)
2.62E-06

SEN. HEAT FLUX
(Watts/m2)
2.08E 00

TOTAL HEAT FLUX
(Watts/m2)
-4.92E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.897E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
7.316E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-2.897E-05

SCALING POT. TEMP.
(Kelvin)
-2.274E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.821E-02

ROUGHNESS LENGTH
(Meters)
2.917E-12

DRAG COEF. AT 10 METERS
(Dimensionless)
5.353E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.15E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.42E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.47E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.30E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.78E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.63E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.08E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.68E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160100
PAGE: 3
START TIME: 1: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.543	6.04	8.66	NO DATA		15.000	-1.457	-1.359	-0.267	-0.169
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.641	14.733	14.831	8.476E-03	72.31	6.828E-03	11.214	15.508	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.148 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.169

Z/L AT 10 METERS
-0.157

MONIN-OBUKHOV LENGTH (Meters)
-6.349E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.63E-02

HUMIDITY FLUX (Kg/sec m2)
3.46E-05

SEN. HEAT FLUX (Watts/m2)
1.19E 01

TOTAL HEAT FLUX (Watts/m2)
8.38E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.935E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.445E-04

SCALING POT. TEMP. (Kelvin)
-4.934E-02

SCALING V. POT. TEMP. (Kelvin)
-3.466E-01

ROUGHNESS LENGTH (Meters)
1.819E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.028E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.746E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.458E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.549E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.897E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160130
START TIME: 1:30: 0 PST
END TIME: 1:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.736	4.818	3.203	3.031	5.347	0.096	4.740

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.191	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134771	1421 136442

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.477	6.23	8.23	NO DATA	306.2	1021.3	1.34E 01	15.000	286.721

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.644	6.02	8.49	NO DATA	-0.07

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.658	14.633	14.814	8.232E-03	70.52	6.632E-03	10.890	15.442	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.706	14.821	14.882	8.373E-03	70.99	6.749E-03	11.082	15.611	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160130
PAGE: 2
START TIME: 1:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.345 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.379

Z/L AT 10 METERS
-0.352

Z/L AT Z1
-0.650

Z/L AT Z2
-0.221

MONIN-OBUKHOV LENGTH
(Meters)
-2.838E 01

PSI1 AT Z1= 0.879550
PSI1 AT Z2= 0.471315
PSI2 AT Z1= 0.592628
PSI2 AT Z2= 0.310279

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.56E-02

HUMIDITY FLUX
(Kg/sec m2)
9.62E-06

SEN. HEAT FLUX
(Watts/m2)
3.95E 00

TOTAL HEAT FLUX
(Watts/m2)
1.43E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.123E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-6.930E-05

SCALING POT. TEMP.
(Kelvin)
-2.818E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.067E-02

ROUGHNESS LENGTH
(Meters)
5.534E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
1.261E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.17E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.18E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.79E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.91E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.12E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -6.83E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.68E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.16E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160130
PAGE: 3
START TIME: 1:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.570	6.10	8.37	NO DATA		15.000	-1.430	-1.332	-0.263	-0.165
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.668	14.737	14.835	8.307E-03	70.75	6.694E-03	10.992	15.536	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.141 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.162

Z/L AT 10 METERS
-0.150

MONIN-OBUKHOV LENGTH (Meters)
-6.647E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.75E-02

HUMIDITY FLUX (Kg/sec m2)
3.63E-05

SEN. HEAT FLUX (Watts/m2)
1.18E 01

TOTAL HEAT FLUX (Watts/m2)
8.81E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.960E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.499E-04

SCALING POT. TEMP. (Kelvin)
-4.833E-02

SCALING V. POT. TEMP. (Kelvin)
-3.596E-01

ROUGHNESS LENGTH (Meters)
1.861E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.033E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.841E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.631E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.473E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160200
START TIME: 2: 0: 0 PST
END TIME: 2:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.736	4.812	3.092	2.941	5.345	0.096	4.687

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.202	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134505	1421 136114

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.450	6.02	8.23	NO DATA	304.3	1021.3	1.35E 01	15.000	286.691

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.611	5.84	8.45	NO DATA	-0.14

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES 1	S. VAP. PRES 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.631	14.606	14.787	8.231E-03	70.62	6.630E-03	10.887	15.416	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.673	14.785	14.846	8.351E-03	70.95	6.731E-03	11.052	15.578	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160200
PAGE: 2
START TIME: 2: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.459 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.498

Z/L AT 10 METERS
-0.464

Z/L AT Z1
-0.856

Z/L AT Z2
-0.290

MONIN-OBUKHOV LENGTH
(Meters)
-2.156E 01

PSI1 AT Z1= 1.007246
PSI1 AT Z2= 0.560401
PSI2 AT Z1= 0.680523
PSI2 AT Z2= 0.371766

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.15E-02

HUMIDITY FLUX
(Kg/sec m2)
7.34E-06

SEN. HEAT FLUX
(Watts/m2)
3.06E 00

TOTAL HEAT FLUX
(Watts/m2)
7.72E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.897E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.644E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-6.156E-05

SCALING POT. TEMP.
(Kelvin)
-2.538E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.651E-02

ROUGHNESS LENGTH
(Meters)
4.845E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
9.300E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.76E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.01E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.17E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.00E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.63E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -7.68E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.86E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.30E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160200
PAGE: 3
START TIME: 2: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.540	5.91	8.34	NO DATA		15.000	-1.460	-1.362	-0.295	-0.197
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.638	14.705	14.803	8.294E-03	70.78	6.684E-03	10.975	15.506	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.158 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.180

Z/L AT 10 METERS
-0.167

MONIN-OBUKHOV LENGTH (Meters)
-5.979E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.40E-02

HUMIDITY FLUX (Kg/sec m2)
3.53E-05

SEN. HEAT FLUX (Watts/m2)
1.18E 01

TOTAL HEAT FLUX (Watts/m2)
8.54E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.887E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.512E-04

SCALING POT. TEMP. (Kelvin)
-4.982E-02

SCALING V. POT. TEMP. (Kelvin)
-3.620E-01

ROUGHNESS LENGTH (Meters)
1.741E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.020E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.563E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.527E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.404E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.897E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160230
START TIME: 2:30: 0 PST
END TIME: 2:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.783	4.854	2.988	2.840	5.348	0.099	4.521

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.186	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134494	1421 136021

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.449	5.81	8.50	NO DATA	298.7	1021.3	1.38E 01	15.000	286.686

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.602	5.65	8.70	NO DATA	-0.19

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.630	14.626	14.807	8.385E-03	71.95	6.754E-03	11.091	15.415	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.663	14.796	14.857	8.497E-03	72.23	6.848E-03	11.245	15.569	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160230
PAGE: 2
START TIME: 2:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.399 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.435

Z/L AT 10 METERS
-0.405

Z/L AT Z1
-0.748

Z/L AT Z2
-0.254

MONIN-OBUKHOV LENGTH
(Meters)
-2.468E 01

PSI1 AT Z1= 0.943341
PSI1 AT Z2= 0.515365
PSI2 AT Z1= 0.636594
PSI2 AT Z2= 0.340647

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-9.99E-03

HUMIDITY FLUX
(Kg/sec m2)
6.26E-06

SEN. HEAT FLUX
(Watts/m2)
2.25E 00

TOTAL HEAT FLUX
(Watts/m2)
3.93E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.897E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.991E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-5.629E-05

SCALING POT. TEMP.
(Kelvin)
-2.001E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.020E-02

ROUGHNESS LENGTH
(Meters)
2.203E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
8.084E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.69E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -9.40E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.34E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.05E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.89E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -8.40E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.36E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.57E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160230
PAGE: 3
START TIME: 2:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.534	5.71	8.61	NO DATA		15.000	-1.466	-1.368	-0.280	-0.182
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.632	14.720	14.818	8.444E-03	72.08	6.804E-03	11.173	15.500	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.175 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.198

Z/L AT 10 METERS
-0.184

MONIN-OBUKHOV LENGTH (Meters)
-5.420E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.06E-02

HUMIDITY FLUX (Kg/sec m2)
3.30E-05

SEN. HEAT FLUX (Watts/m2)
1.15E 01

TOTAL HEAT FLUX (Watts/m2)
7.91E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.813E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.471E-04

SCALING POT. TEMP. (Kelvin)
-5.068E-02

SCALING V. POT. TEMP. (Kelvin)
-3.492E-01

ROUGHNESS LENGTH (Meters)
1.622E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.007E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.285E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.296E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.186E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.897E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160300
START TIME: 3: 0: 0 PST
END TIME: 3:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE, 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.759	4.820	3.050	2.897	5.344	0.098	4.477

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.175	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134533	1421 136095

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.453	5.94	8.35	NO DATA	297.2	1021.3	1.37E 01	15.000	286.691

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.609	5.76	8.50	NO DATA	-0.21

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.634	14.618	14.799	8.300E-03	71.20	6.686E-03	10.979	15.418	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.671	14.787	14.848	8.380E-03	71.20	6.754E-03	11.091	15.576	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160300
PAGE: 2
START TIME: 3: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-D MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.393 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.429

Z/L AT 10 METERS
-0.399

Z/L AT Z1
-0.737

Z/L AT Z2
-0.250

MONIN-OBUKHOV LENGTH
(Meters)
-2.503E 01

PSI1 AT Z1= 0.936724
PSI1 AT Z2= 0.510753
PSI2 AT Z1= 0.632039
PSI2 AT Z2= 0.337464

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.11E-02

HUMIDITY FLUX
(Kg/sec m2)
4.83E-06

SEN. HEAT FLUX
(Watts/m2)
2.62E 00

TOTAL HEAT FLUX
(Watts/m2)
8.33E-01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.897E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.496E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-4.114E-05

SCALING POT. TEMP.
(Kelvin)
-2.209E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.965E-02

ROUGHNESS LENGTH
(Meters)
4.713E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
9.018E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.79E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -6.89E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.70E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.96E-03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.69E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.15E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.14E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.60E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160300
PAGE: 3
START TIME: 3: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.540	5.83	8.43	NO DATA		15.000	-1.460	-1.362	-0.288	-0.190
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.638	14.712	14.810	8.343E-03	71.19	6.722E-03	11.038	15.506	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.165 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.187

Z/L AT 10 METERS
-0.174

MONIN-OBUKHOV LENGTH (Meters)
-5.747E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.26E-02

HUMIDITY FLUX (Kg/sec m2)
3.44E-05

SEN. HEAT FLUX (Watts/m2)
1.16E 01

TOTAL HEAT FLUX (Watts/m2)
8.29E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.856E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.500E-04

SCALING POT. TEMP. (Kelvin)
-5.011E-02

SCALING V. POT. TEMP. (Kelvin)
-3.573E-01

ROUGHNESS LENGTH (Meters)
1.690E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.015E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.444E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.441E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.299E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.897E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160330
START TIME: 3:30: 0 PST
END TIME: 3:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.796	4.835	3.184	3.026	5.339	0.099	4.517

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.192	2.449	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134208	1421 135826

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.421	6.19	8.56	NO DATA	298.6	1021.2	1.38E 01	15.000	286.662

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.583	6.00	8.58	NO DATA	-0.20

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.602	14.603	14.784	8.422E-03	72.40	6.784E-03	11.139	15.386	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.644	14.767	14.828	8.430E-03	71.74	6.794E-03	11.155	15.549	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160330
PAGE: 2
START TIME: 3:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.399 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.436

Z/L AT 10 METERS
-0.405

Z/L AT Z1
-0.748

Z/L AT Z2
-0.254

MONIN-OBUKHOV LENGTH
(Meters)
-2.467E 01

PSI1 AT Z1= 0.943526
PSI1 AT Z2= 0.515494
PSI2 AT Z1= 0.636722
PSI2 AT Z2= 0.340737

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.27E-02

HUMIDITY FLUX
(Kg/sec m2)
7.56E-07

SEN. HEAT FLUX
(Watts/m2)
3.24E 00

TOTAL HEAT FLUX
(Watts/m2)
-8.69E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.897E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.015E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-6.029E-06

SCALING POT. TEMP.
(Kelvin)
-2.552E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.697E-02

ROUGHNESS LENGTH
(Meters)
7.922E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
1.031E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.91E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.01E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.26E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.51E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.45E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -7.85E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.85E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.75E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160330
PAGE: 3
START TIME: 3:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.511	6.08	8.57	NO DATA		15.000	-1.489	-1.391	-0.306	-0.208
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.609	14.694	14.792	8.426E-03	72.03	6.790E-03	11.148	15.477	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.148 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.169

Z/L AT 10 METERS
-0.157

MONIN-OBUKHOV LENGTH (Meters)
-6.358E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.71E-02

HUMIDITY FLUX (Kg/sec m2)
3.52E-05

SEN. HEAT FLUX (Watts/m2)
1.22E 01

TOTAL HEAT FLUX (Watts/m2)
8.54E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.952E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.460E-04

SCALING POT. TEMP. (Kelvin)
-5.010E-02

SCALING V. POT. TEMP. (Kelvin)
-3.501E-01

ROUGHNESS LENGTH (Meters)
1.847E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.031E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.810E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.522E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.779E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.897E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160400
START TIME: 4: 0: 0 PST
END TIME: 4:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.818	4.868	3.344	3.147	5.345	0.100	4.659

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.188	2.450	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134844	1421 136475

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.484	6.50	8.69	NO DATA		303.4	1021.3	1.40E 01	15.000	286.726

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)
13.647	6.24	8.78	NO DATA		-0.15

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.665	14.677	14.858	8.494E-03	72.73	6.843E-03	11.236	15.450	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.709	14.848	14.909	8.541E-03	72.40	6.885E-03	11.305	15.615	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160400
PAGE: 2
START TIME: 4: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.209 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.234

Z/L AT 10 METERS
-0.218

Z/L AT Z1
-0.402

Z/L AT Z2
-0.136

MONIN-OBUKHOV LENGTH
(Meters)
-4.594E 01

PSI1 AT Z1= 0.678650
PSI1 AT Z2= 0.339250
PSI2 AT Z1= 0.453643
PSI2 AT Z2= 0.219915

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.94E-02

HUMIDITY FLUX
(Kg/sec m2)
3.63E-06

SEN. HEAT FLUX
(Watts/m2)
3.81E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.24E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.253E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.344E-05

SCALING POT. TEMP.
(Kelvin)
-2.431E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.878E-02

ROUGHNESS LENGTH
(Meters)
2.022E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
1.571E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.67E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.23E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.38E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.19E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.79E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.02E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.95E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.64E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Ax
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160400
PAGE: 3
START TIME: 4: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.575	6.34	8.74	NO DATA		15.000	-1.425	-1.327	-0.228	-0.130
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.673	14.772	14.870	8.519E-03	72.53	6.865E-03	11.273	15.542	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.126 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.145

Z/L AT 10 METERS
-0.135

MONIN-OBUKHOV LENGTH
(Meters)
-7.433E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.21E-02

HUMIDITY FLUX
(Kg/sec m2)
3.60E-05

SEN. HEAT FLUX
(Watts/m2)
1.22E 01

TOTAL HEAT FLUX
(Watts/m2)
8.70E 01

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.053E-01

SCALING SPEC. HUMID.
(Kg/Kg)
-1.419E-04

SCALING POT. TEMP.
(Kelvin)
-4.743E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.390E-01

ROUGHNESS LENGTH
(Meters)
2.022E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.049E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
4.216E-02

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
3.597E-05

WITH POT. TEMPERATURE
(Meter Kel./sec)
9.739E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL
(Millibar)
17.044

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160430
START TIME: 4:30: 0 PST
END TIME: 4:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.864	4.907	3.255	3.049	5.346	0.102	4.772

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.224	2.451	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135221	1421 136879

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.522	6.33	8.96	NO DATA	307.2	1021.3	1.43E 01	15.000	286.765

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.688	6.05	9.02	NO DATA	-0.06

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.703	14.736	14.917	8.646E-03	73.86	6.966E-03	11.439	15.488	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.749	14.908	14.969	8.677E-03	73.37	6.995E-03	11.487	15.656	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160430
PAGE: 2
START TIME: 4:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.198 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.322

Z/L AT 10 METERS
-0.207

Z/L AT Z1
-0.382

Z/L AT Z2
-0.130

MONIN-OBUKHOV LENGTH
(Meters)
-4.830E 01

PSI1 AT Z1= 0.659484
PSI1 AT Z2= 0.327237
PSI2 AT Z1= 0.440365
PSI2 AT Z2= 0.211768

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.13E-02

HUMIDITY FLUX
(Kg/sec m2)
2.59E-06

SEN. HEAT FLUX
(Watts/m2)
8.22E 00

TOTAL HEAT FLUX
(Watts/m2)
-3.67E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.314E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.592E-05

SCALING POT. TEMP.
(Kelvin)
-2.569E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.885E-02

ROUGHNESS LENGTH
(Meters)
7.414E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
1.727E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.83E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -2.89E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.66E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.23E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.66E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.97E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.84E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.64E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160430
PAGE: 3
START TIME: 4:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.615	6.16	8.99	NO DATA	15.000	-1.385	-1.287	-0.168	-0.070

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	13.713	14.832	14.930	8.662E-03	73.58	6.982E-03	11.464	15.581	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.133 AT GMH	-4.84E-02	1.983E-01	3.932E-02	1.235
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
10.75	3.38E-05	-1.378E-04	3.377E-05	2.415E 02
Z/L AT GMH	SEN. HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	WITH POT. TEMPERATURE (Meter Kel./sec)	WATER LAT. HEAT VAP. (ITcal./Kg)
-0.153	1.16E 01	-4.688E-02	9.295E-03	5.896E 05
Z/L AT 10 METERS	TOTAL HEAT FLUX (Watts/m2)	SCALING V. POT. TEMP. (Kelvin)		VAP. PRES. AT WT LEVEL (Millibar)
-0.143	8.07E 01	-3.258E-01		17.044
MONIN-OBUKHOV LENGTH (Meters)		ROUGHNESS LENGTH (Meters)		ABS. HUMID AT WT LEVEL (Kg/m3)
-7.016E 01		1.900E-04		1.282E-02
		DRAG COEF. AT 10 METERS (Dimensionless)		
		1.037E-03		

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160500
START TIME: 5: 0: 0 PST
END TIME: 5:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.900	4.929	2.960	2.806	5.346	0.106	4.764

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.234	2.451	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134874	1421 136448

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.5	60.23

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.487	5.76	9.16	NO DATA	307.0	1021.3	1.48E 01	15.000	286.726

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.645	5.58	9.15	NO DATA	0.05

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.668	14.719	14.900	8.770E-03	75.08	7.065E-03	11.602	15.453	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.706	14.875	14.937	8.755E-03	74.22	7.057E-03	11.588	15.612	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160500
PAGE: 2
START TIME: 5: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.393 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.429

Z/L AT 10 METERS
-0.399

Z/L AT Z1
-0.736

Z/L AT Z2
-0.250

MONIN-OBUKHOV LENGTH
(Meters)
-2.506E 01

PSI1 AT Z1= 0.936259
PSI1 AT Z2= 0.510429
PSI2 AT Z1= 0.631719
PSI2 AT Z2= 0.337241

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.15E-02

HUMIDITY FLUX
(Kg/sec m2)
-6.21E-07

SEN. HEAT FLUX
(Watts/m2)
2.75E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.36E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.653E-02

SCALING SPEC. HUMD.
(Kg/Kg)
5.202E-06

SCALING POT. TEMP.
(Kelvin)
-2.282E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.232E-02

ROUGHNESS LENGTH
(Meters)
1.260E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
9.319E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.82E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 8.71E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.82E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.74E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.63E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 9.09E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.07E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.12E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160500
PAGE: 3
START TIME: 5: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.575	5.65	9.15	NO DATA		15.000	-1.425	-1.327	-0.194	-0.096
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.673	14.806	14.904	8.762E-03	74.60	7.061E-03	11.594	15.541	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.176 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.199

Z/L AT 10 METERS
-0.186

MONIN-OBUKHOV LENGTH (Meters)
-5.389E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.96E-02

HUMIDITY FLUX (Kg/sec m2)
3.02E-05

SEN. HEAT FLUX (Watts/m2)
1.11E 01

TOTAL HEAT FLUX (Watts/m2)
7.09E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.790E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.368E-04

SCALING POT. TEMP. (Kelvin)
-4.972E-02

SCALING V. POT. TEMP. (Kelvin)
-3.172E-01

ROUGHNESS LENGTH (Meters)
1.587E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.003E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.204E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.025E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.899E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160530
START TIME: 5:30: 0 PST
END TIME: 5:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.909	4.941	3.044	2.885	5.351	0.110	4.863

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.222	2.451	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134879	1421 136511

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.488	5.92	9.21	NO DATA	310.3	1021.4	1.53E 01	15.000	286.730

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.651	5.73	9.22	NO DATA	0.18

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.669	14.723	14.904	8.800E-03	75.33	7.089E-03	11.641	15.453	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.712	14.888	14.949	8.798E-03	74.56	7.091E-03	11.645	15.618	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160530
PAGE: 2
START TIME: 5:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.406 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.443

Z/L AT 10 METERS
-0.413

Z/L AT Z1
-0.761

Z/L AT Z2
-0.258

MONIN-OBUKHOV LENGTH
(Meters)
-2.423E 01

PSI1 AT Z1= 0.951796
PSI1 AT Z2= 0.521273
PSI2 AT Z1= 0.642414
PSI2 AT Z2= 0.344726

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.30E-02

HUMIDITY FLUX
(Kg/sec m2)
2.00E-07

SEN. HEAT FLUX
(Watts/m2)
3.38E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.14E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.026E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.577E-06

SCALING POT. TEMP.
(Kelvin)
-2.640E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.710E-02

ROUGHNESS LENGTH
(Meters)
2.478E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
1.052E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.92E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -2.63E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.40E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.52E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.41E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -3.00E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.79E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.75E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160530
PAGE: 3
START TIME: 5:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.579	5.81	9.22	NO DATA		15.000	-1.421	-1.323	-0.185	-0.087
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.677	14.815	14.913	8.798E-03	74.90	7.090E-03	11.643	15.545	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.162 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.184

Z/L AT 10 METERS
-0.172

MONIN-OBUKHOV LENGTH (Meters)
-5.826E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.22E-02

HUMIDITY FLUX (Kg/sec m2)
3.08E-05

SEN. HEAT FLUX (Watts/m2)
1.13E 01

TOTAL HEAT FLUX (Watts/m2)
7.21E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.849E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.348E-04

SCALING POT. TEMP. (Kelvin)
-4.906E-02

SCALING V. POT. TEMP. (Kelvin)
-3.120E-01

ROUGHNESS LENGTH (Meters)
1.678E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.013E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.417E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.080E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.069E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160600
START TIME: 6: 0: 0 PST
END TIME: 6:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.884	4.913	3.066	2.908	5.361	0.118	4.932

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.210	2.452	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134713	1421 136343

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.471	5.97	9.06	NO DATA	312.7	1021.5	1.64E 01	15.000	286.713

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.634	5.78	9.05	NO DATA	0.32

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.652	14.693	14.874	8.707E-03	74.61	7.012E-03	11.517	15.437	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.696	14.857	14.918	8.698E-03	73.79	7.009E-03	11.512	15.601	NO DATA

* CONTINUED ON PAGE 2

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PAGE: 2
START TIME: 6: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.412 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.449

Z/L AT 10 METERS
-0.418

Z/L AT Z1
-0.771

Z/L AT Z2
-0.262

MONIN-OBUKHOV LENGTH
(Meters)
-2.392E 01

PSI1 AT Z1= 0.957838
PSI1 AT Z2= 0.525504
PSI2 AT Z1= 0.646571
PSI2 AT Z2= 0.347648

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.28E-02

HUMIDITY FLUX
(Kg/sec m2)
-2.30E-07

SEN. HEAT FLUX
(Watts/m2)
3.35E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.36E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.020E-01

SCALING SPEC. HUMD.
(Kg/Kg)
1.826E-06

SCALING POT. TEMP.
(Kelvin)
-2.633E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.643E-02

ROUGHNESS LENGTH
(Meters)
1.890E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
1.040E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.90E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 3.04E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.38E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.40E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.43E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 2.59E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.80E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.79E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160600
PAGE: 3
START TIME: 6: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.562	5.85	9.05	NO DATA		15.000	-1.438	-1.340	-0.216	-0.118
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.660	14.784	14.882	8.702E-03	74.15	7.011E-03	11.515	15.528	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.161 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.182

Z/L AT 10 METERS
-0.170

MONIN-OBUKHOV LENGTH (Meters)
-5.891E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.30E-02

HUMIDITY FLUX (Kg/sec m2)
3.18E-05

SEN. HEAT FLUX (Watts/m2)
1.15E 01

TOTAL HEAT FLUX (Watts/m2)
7.35E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.865E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.378E-04

SCALING POT. TEMP. (Kelvin)
-4.939E-02

SCALING V. POT. TEMP. (Kelvin)
-3.155E-01

ROUGHNESS LENGTH (Meters)
1.705E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.016E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.479E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.178E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.212E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160630
START TIME: 6:30: 0 PST
END TIME: 6:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.856	4.888	2.978	2.827	5.368	0.272	4.817

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.000	4.161	2.451	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134653	1421 136263

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.5	60.16

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.465	5.80	8.88	NO DATA	308.8	1021.7	3.79E 01	15.000	286.706

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.626	5.62	8.91	NO DATA	0.47

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	13.646	14.673	14.854	8.606E-03	73.77	6.930E-03	11.384	15.431	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.688	14.837	14.898	8.614E-03	73.11	6.941E-03	11.401	15.593	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160630
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START TIME: 6:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.470 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.510

Z/L AT 10 METERS
-0.475

Z/L AT Z1
-0.876

Z/L AT Z2
-0.297

MONIN-OBUKHOV LENGTH
(Meters)
-2.106E 01

PSI1 AT Z1= 1.018635
PSI1 AT Z2= 0.568517
PSI2 AT Z1= 0.688338
PSI2 AT Z2= 0.377379

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.14E-02

HUMIDITY FLUX
(Kg/sec m2)
7.47E-07

SEN. HEAT FLUX
(Watts/m2)
3.05E 00

TOTAL HEAT FLUX
(Watts/m2)
-3.30E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.897E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.584E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-6.301E-06

SCALING POT. TEMP.
(Kelvin)
-2.550E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.701E-02

ROUGHNESS LENGTH
(Meters)
9.467E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
9.184E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.74E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.03E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.18E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.43E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.65E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -7.51E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.86E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.75E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160630
PAGE: 3
START TIME: 6:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.555	5.69	8.89	NO DATA	15.000	-1.445	-1.347	-0.236	-0.138

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	13.653	14.764	14.862	8.610E-03	73.40	6.936E-03	11.393	15.521	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.175 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.198

Z/L AT 10 METERS
-0.184

MONIN-OBUKHOV LENGTH (Meters)
-5.426E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.02E-02

HUMIDITY FLUX (Kg/sec m2)
3.16E-05

SEN. HEAT FLUX (Watts/m2)
1.13E 01

TOTAL HEAT FLUX (Watts/m2)
5.14E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.804E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.416E-04

SCALING POT. TEMP. (Kelvin)
-5.016E-02

SCALING V. POT. TEMP. (Kelvin)
-2.281E-01

ROUGHNESS LENGTH (Meters)
1.609E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.006E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.255E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.159E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.050E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160700
START TIME: 7: 0: 0 PST
END TIME: 7:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6. 204	0. 000	0. 000	4. 907	4. 935	3. 043	2. 903	5. 387	0. 784	4. 739

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5. 000	4. 214	2. 452	0. 000	0. 000	0. 000	0. 000	6. 204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 134961	1421 136533

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114. 5	60. 21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13. 496	5. 92	9. 18	NO DATA	306. 1	1021. 9	1. 09E 02	15. 000	286. 735

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13. 653	5. 77	9. 19	NO DATA	0. 60

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18. 45	13. 677	14. 728	14. 909	8. 781E-03	75. 13	7. 070E-03	11. 617	15. 462	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6. 26	13. 715	14. 886	14. 948	8. 777E-03	74. 38	7. 071E-03	11. 618	15. 621	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160700
PAGE: 2
START TIME: 7: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.546 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.590

Z/L AT 10 METERS
-0.550

Z/L AT Z1
-1.014

Z/L AT Z2
-0.344

MONIN-OBUKHOV LENGTH
(Meters)
-1.820E 01

PSI1 AT Z1= 1.090600
PSI1 AT Z2= 0.620407
PSI2 AT Z1= 0.737619
PSI2 AT Z2= 0.413297

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-9.47E-03

HUMIDITY FLUX
(Kg/sec m2)
6.81E-08

SEN. HEAT FLUX
(Watts/m2)
2.58E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.07E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.751E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-6.291E-07

SCALING POT. TEMP.
(Kelvin)
-2.358E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.411E-02

ROUGHNESS LENGTH
(Meters)
7.535E-10

DRAG COEF. AT 10 METERS
(Dimensionless)
7.657E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.54E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.01E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.80E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.88E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.00E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -7.52E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.01E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.96E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160700
PAGE: 3
START TIME: 7: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.584	5.83	9.18	NO DATA	15.000	-1.416	-1.318	-0.184	-0.086

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	13.682	14.816	14.914	8.779E-03	74.71	7.070E-03	11.617	15.550	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.160 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.182

Z/L AT 10 METERS
-0.169

MONIN-OBUKHOV LENGTH (Meters)
-5.902E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.26E-02

HUMIDITY FLUX (Kg/sec m2)
3.11E-05

SEN. HEAT FLUX (Watts/m2)
1.13E 01

TOTAL HEAT FLUX (Watts/m2)
-2.13E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.857E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.353E-04

SCALING POT. TEMP. (Kelvin)
-4.885E-02

SCALING V. POT. TEMP. (Kelvin)
9.190E-02

ROUGHNESS LENGTH (Meters)
1.691E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.015E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.447E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.106E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
9.069E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.044

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.282E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160805
START TIME: 8: 5: 0 PST
END TIME: 8:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 25 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.911	4.938	3.394	3.207	5.417	2.196	4.911

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.150	4.180	2.457	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 135850	1421 137306

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	150	0	0	0	0	0	114.6	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.585	6.60	9.19	NO DATA	312.0	1022.4	3.06E 02	15.150	286.818

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.731	6.35	9.20	NO DATA	0.84

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.766	14.818	14.999	8.785E-03	74.76	7.072E-03	11.626	15.551	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.792	14.965	15.026	8.785E-03	74.09	7.076E-03	11.631	15.700	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160805
PAGE: 2
START TIME: 8: 5: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 25 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.145 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.166

Z/L AT 10 METERS
-0.154

Z/L AT Z1
-0.285

Z/L AT Z2
-0.097

MONIN-OBUKHOV LENGTH
(Meters)
-6.473E 01

PSI1 AT Z1= 0.554211
PSI1 AT Z2= 0.263304
PSI2 AT Z1= 0.367485
PSI2 AT Z2= 0.168696

FLUX PARAMETERS (+=UP, -=DWN)

MOMENTUM FLUX
(Nt/m2)
-1.47E-02

HUMIDITY FLUX
(Kg/sec m2)
2.37E-07

SEN. HEAT FLUX
(Watts/m2)
1.91E 00

TOTAL HEAT FLUX
(Watts/m2)
-3.04E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.237

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.896E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.092E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.755E-06

SCALING POT. TEMP.
(Kelvin)
-1.401E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.465E-02

ROUGHNESS LENGTH
(Meters)
1.026E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
1.192E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.48E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -3.30E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.63E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.75E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.21E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.69E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.38E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.23E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160805
PAGE: 3
START TIME: 8: 5: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 25 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.666	6.45	9.20	NO DATA		15.150	-1.484	-1.386	-0.250	-0.152
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.764	14.900	14.998	8.785E-03	74.38	7.074E-03	11.629	15.634	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.124 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.143

Z/L AT 10 METERS
-0.133

MONIN-OBUKHOV LENGTH (Meters)
-7.532E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.43E-02

HUMIDITY FLUX (Kg/sec m2)
3.53E-05

SEN. HEAT FLUX (Watts/m2)
1.28E 01

TOTAL HEAT FLUX (Watts/m2)
-2.06E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.096E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.363E-04

SCALING POT. TEMP. (Kelvin)
-4.878E-02

SCALING V. POT. TEMP. (Kelvin)
7.874E-01

ROUGHNESS LENGTH (Meters)
2.098E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.056E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.392E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.532E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.022E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.896E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.209

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.293E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160830
START TIME: 8:30: 0 PST
END TIME: 8:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.893	4.921	3.535	3.349	5.431	2.755	4.891

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.300	4.189	2.458	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 137093	1421 138376

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.709	6.87	9.10	NO DATA	311.3	1022.6	3.84E 02	15.300	286.933

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.838	6.63	9.10	NO DATA	0.90

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	13.890	14.935	15.116	8.726E-03	73.69	7.027E-03	11.553	15.678	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	13.899	15.064	15.125	8.721E-03	73.06	7.025E-03	11.551	15.809	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160830
PAGE: 2
START TIME: 8:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.050 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.061

Z/L AT 10 METERS
-0.056

Z/L AT Z1
-0.104

Z/L AT Z2
-0.035

MONIN-OBUKHOV LENGTH
(Meters)
-1.776E 02

PSI1 AT Z1= 0.278039
PSI1 AT Z2= 0.114704
PSI2 AT Z1= 0.178576
PSI2 AT Z2= 0.071232

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.08E-02

HUMIDITY FLUX
(Kg/sec m2)
-7.72E-08

SEN. HEAT FLUX
(Watts/m2)
5.00E-01

TOTAL HEAT FLUX
(Watts/m2)
-3.84E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.330E-02

SCALING SPEC. HUMD.
(Kg/Kg)
6.696E-07

SCALING POT. TEMP.
(Kelvin)
-4.284E-03

SCALING V. POT. TEMP.
(Kelvin)
-4.433E-03

ROUGHNESS LENGTH
(Meters)
1.080E-10

DRAG COEF. AT 10 METERS
(Dimensionless)
8.705E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.46E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.39E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.88E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -9.18E-04

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.75E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 7.06E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.10E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.07E 02

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160830
PAGE: 3
START TIME: 8:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.781	6.72	9.10	NO DATA		15.300	-1.519	-1.421	-0.293	-0.195
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	13.879	15.007	15.105	8.723E-03	73.34	7.026E-03	11.552	15.751	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.112 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.130

Z/L AT 10 METERS
-0.121

MONIN-OBUKHOV LENGTH (Meters)
-8.292E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.00E-02

HUMIDITY FLUX (Kg/sec m2)
3.84E-05

SEN. HEAT FLUX (Watts/m2)
1.35E 01

TOTAL HEAT FLUX (Watts/m2)
-2.76E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.203E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.411E-04

SCALING POT. TEMP. (Kelvin)
-4.898E-02

SCALING V. POT. TEMP. (Kelvin)
1.002E 00

ROUGHNESS LENGTH (Meters)
2.297E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.074E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.853E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.842E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.079E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.376

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.305E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811160900
START TIME: 9: 0: 0 PST
END TIME: 9:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.846	4.870	3.311	3.143	5.437	3.360	5.014

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.383	4.194	2.459	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 138379	1421 139277

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.838	6.44	8.83	NO DATA	315.5	1022.7	4.69E 02	15.383	287.043

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
13.928	6.23	8.80	NO DATA	0.94

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.019	15.042	15.223	8.567E-03	71.77	6.900E-03	11.347	15.809	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	13.989	15.129	15.191	8.543E-03	71.18	6.883E-03	11.318	15.902	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160900
PAGE: 2
START TIME: 9: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.231 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.895E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.10E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.74E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 2.99E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 3.25E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160900
PAGE: 3
START TIME: 9: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.888	6.31	8.82	NO DATA	15.383	-1.495	-1.397	-0.292	-0.194

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	13.986	15.091	15.189	8.554E-03	71.44	6.891E-03	11.332	15.861	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.133 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.152

Z/L AT 10 METERS
-0.142

MONIN-OBUKHOV LENGTH (Meters)
-7.049E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.15E-02

HUMIDITY FLUX (Kg/sec m2)
3.80E-05

SEN. HEAT FLUX (Watts/m2)
1.26E 01

TOTAL HEAT FLUX (Watts/m2)
-3.62E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.042E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.507E-04

SCALING POT. TEMP. (Kelvin)
-4.952E-02

SCALING V. POT. TEMP. (Kelvin)
1.419E 00

ROUGHNESS LENGTH (Meters)
2.002E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.047E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
4.170E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.803E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.011E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.895E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.469

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.312E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811160930
START TIME: 9:30: 0 PST
END TIME: 9:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.885	4.919	3.063	2.911	5.445	3.824	4.916

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.467	4.224	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 138963	1421 139854

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.896	5.96	9.08	NO DATA	312.1	1022.8	5.33E 02	15.467	287.101

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
13.985	5.78	9.09	NO DATA	0.94

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.077	15.120	15.301	8.706E-03	72.68	7.014E-03	11.534	15.870	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.047	15.211	15.272	8.709E-03	72.30	7.018E-03	11.541	15.962	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811160930
PAGE: 2
START TIME: 9:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 0.329 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.78E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -4.14E-07	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED			
Z/L AT Z1 NOT COMUTED		SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 3.06E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS			
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.236	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 2.95E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal. /Kg Kel.) 2.415E 02	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal. /Kg) 5.894E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811160930
PAGE: 3
START TIME: 9:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.946	5.85	9.08	NO DATA		15.467	-1.521	-1.423	-0.296	-0.198
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.044	15.171	15.269	8.708E-03	72.47	7.016E-03	11.538	15.921	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.168 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.191

Z/L AT 10 METERS
-0.178

MONIN-OBUKHOV LENGTH (Meters)
-5.630E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.30E-02

HUMIDITY FLUX (Kg/sec m2)
3.46E-05

SEN. HEAT FLUX (Watts/m2)
1.21E 01

TOTAL HEAT FLUX (Watts/m2)
-4.36E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.866E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.500E-04

SCALING POT. TEMP. (Kelvin)
-5.178E-02

SCALING V. POT. TEMP. (Kelvin)
1.869E 00

ROUGHNESS LENGTH (Meters)
1.706E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.016E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.482E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.460E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.663E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.563

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.319E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811161000
START TIME: 10: 0: 0 PST
END TIME: 10:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.887	4.922	2.990	2.831	5.441	4.200	4.803

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.550	4.203	2.464	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 139439	1421 140424

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
13.944	5.82	9.10	NO DATA	308.3	1022.8	5.86E 02	15.550	287.153

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.042	5.63	9.10	NO DATA	0.90

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.125	15.170	15.351	8.719E-03	72.57	7.025E-03	11.552	15.919	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.104	15.269	15.331	8.717E-03	72.12	7.026E-03	11.554	16.021	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161000
PAGE: 2
START TIME: 10: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.197 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
3.305

Z/L AT 10 METERS
3.076

Z/L AT Z1
5.675

Z/L AT Z2
1.925

MONIN-OBUKHOV LENGTH
(Meters)
3.251E 00

PSI1 AT Z1=-26.672870
PSI1 AT Z2= -9.047090
PSI2 AT Z1=-36.044418
PSI2 AT Z2=-12.225798

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.56E-05

HUMIDITY FLUX
(Kg/sec m2)
1.12E-10

SEN. HEAT FLUX
(Watts/m2)
-1.77E-03

TOTAL HEAT FLUX
(Watts/m2)
-5.86E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.236

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.894E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.554E-03

SCALING SPEC. HUMD.
(Kg/Kg)
-2.554E-08

SCALING POT. TEMP.
(Kelvin)
3.996E-04

SCALING V. POT. TEMP.
(Kelvin)
3.872E-04

ROUGHNESS LENGTH
(Meters)
1.000E-99

DRAG COEF. AT 10 METERS
(Dimensionless)
1.263E-07

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.91E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.35E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 2.12E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 2.05E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 9.85E 01

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.85E 07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= 1.18E 03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= 1.22E 03

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161000
PAGE: 3
START TIME: 10: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
13.999	5.70	9.10	NO DATA		15.550	-1.551	-1.453	-0.325	-0.227
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.097	15.225	15.323	8.718E-03	72.32	7.026E-03	11.553	15.975	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.185 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.208

Z/L AT 10 METERS
-0.194

MONIN-OBUKHOV LENGTH (Meters)
-5.156E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.05E-02

HUMIDITY FLUX (Kg/sec m2)
3.41E-05

SEN. HEAT FLUX (Watts/m2)
1.20E 01

TOTAL HEAT FLUX (Watts/m2)
-4.89E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.810E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.527E-04

SCALING POT. TEMP. (Kelvin)
-5.319E-02

SCALING V. POT. TEMP. (Kelvin)
2.165E 00

ROUGHNESS LENGTH (Meters)
1.617E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.006E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.274E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.414E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.626E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.657

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.325E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811161030
START TIME: 10:30: 0 PST
END TIME: 10:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.877	4.902	2.759	2.649	5.435	4.436	4.678

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.683	4.193	2.468	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140278	1421 141392

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.7	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.028	5.37	9.05	NO DATA	304.0	1022.7	6.19E 02	15.683	287.243

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.139	5.28	8.98	NO DATA	0.81

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.209	15.250	15.431	8.687E-03	71.93	7.002E-03	11.513	16.006	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.201	15.357	15.418	8.644E-03	71.09	6.971E-03	11.461	16.122	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161030
PAGE: 2
START TIME: 10:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 0.319 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.27E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.17E-06	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.08E-04	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED				
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 1.31E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.235			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415E 02	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.893E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161030
PAGE: 3
START TIME: 10:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.090	5.32	9.02	NO DATA		15.683	-1.593	-1.495	-0.373	-0.275
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.188	15.310	15.408	8.664E-03	71.47	6.985E-03	11.486	16.070	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.232 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.259

Z/L AT 10 METERS
-0.241

MONIN-OBUKHOV LENGTH (Meters)
-4.151E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.42E-02

HUMIDITY FLUX (Kg/sec m2)
3.29E-05

SEN. HEAT FLUX (Watts/m2)
1.16E 01

TOTAL HEAT FLUX (Watts/m2)
-5.26E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.665E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.602E-04

SCALING POT. TEMP. (Kelvin)
-5.594E-02

SCALING V. POT. TEMP. (Kelvin)
2.529E 00

ROUGHNESS LENGTH (Meters)
1.401E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.808E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.771E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.294E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.311E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.235

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.808

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.336E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161100
START TIME: 11: 0: 0 PST
END TIME: 11:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.785	4.823	2.866	2.736	5.410	4.600	4.875

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.817	4.176	2.473	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142265	1421 143521

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.18

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.226	5.58	8.52	NO DATA	310.8	1022.3	6.42E 02	15.817	287.449

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.352	5.45	8.51	NO DATA	0.69

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.407	15.407	15.588	8.373E-03	68.50	6.757E-03	11.106	16.213	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.413	15.533	15.594	8.367E-03	67.92	6.754E-03	11.102	16.346	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161100
PAGE: 2
START TIME: 11: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.118 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.136

Z/L AT 10 METERS
-0.127

Z/L AT Z1
-0.234

Z/L AT Z2
-0.079

MONIN-OBUKHOV LENGTH
(Meters)
-7.880E 01

PSI1 AT Z1= 0.489890
PSI1 AT Z2= 0.226073
PSI2 AT Z1= 0.323075
PSI2 AT Z2= 0.143877

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.96E-03

HUMIDITY FLUX
(Kg/sec m2)
-8.62E-08

SEN. HEAT FLUX
(Watts/m2)
2.27E-01

TOTAL HEAT FLUX
(Watts/m2)
-6.42E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.234

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
5.665E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.233E-06

SCALING POT. TEMP.
(Kelvin)
-3.213E-03

SCALING V. POT. TEMP.
(Kelvin)
-3.268E-03

ROUGHNESS LENGTH
(Meters)
1.737E-14

DRAG COEF. AT 10 METERS
(Dimensionless)
3.209E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.33E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.37E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.16E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.27E-04

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 6.18E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 3.84E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.47E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.45E 02

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161100
PAGE: 3
START TIME: 11: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.297	5.50	8.52	NO DATA		15.817	-1.520	-1.422	-0.340	-0.242
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.395	15.477	15.575	8.370E-03	68.18	6.755E-03	11.104	16.287	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.202 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.227

Z/L AT 10 METERS
-0.211

MONIN-OBUKHOV LENGTH (Meters)
-4.740E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.70E-02

HUMIDITY FLUX (Kg/sec m2)
3.70E-05

SEN. HEAT FLUX (Watts/m2)
1.15E 01

TOTAL HEAT FLUX (Watts/m2)
-5.39E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.732E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.731E-04

SCALING POT. TEMP. (Kelvin)
-5.308E-02

SCALING V. POT. TEMP. (Kelvin)
2.493E 00

ROUGHNESS LENGTH (Meters)
1.500E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.929E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.001E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.700E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.195E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.234

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.962

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.347E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811161130
START TIME: 11:30: 0 PST
END TIME: 11:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.774	4.806	2.833	2.689	5.386	4.621	5.021

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.950	4.155	2.474	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141198	1421 142689

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.16

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.120	5.52	8.46	NO DATA	315.7	1021.9	6.44E 02	15.950	287.354

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.269	5.36	8.41	NO DATA	0.53

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.301	15.296	15.477	8.346E-03	68.73	6.735E-03	11.066	16.101	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.330	15.442	15.503	8.312E-03	67.82	6.711E-03	11.026	16.258	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161130
PAGE: 2
START TIME: 11:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.397 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.433

Z/L AT 10 METERS
-0.403

Z/L AT Z1
-0.744

Z/L AT Z2
-0.252

MONIN-OBUKHOV LENGTH
(Meters)
-2.480E 01

PSI1 AT Z1= 0.940954
PSI1 AT Z2= 0.513700
PSI2 AT Z1= 0.634951
PSI2 AT Z2= 0.339498

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-8.89E-03

HUMIDITY FLUX
(Kg/sec m2)
-1.52E-06

SEN. HEAT FLUX
(Watts/m2)
1.88E 00

TOTAL HEAT FLUX
(Watts/m2)
-6.46E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.234

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.487E-02

SCALING SPEC. HUMD.
(Kg/Kg)
1.453E-05

SCALING POT. TEMP.
(Kelvin)
-1.781E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.563E-02

ROUGHNESS LENGTH
(Meters)
1.975E-09

DRAG COEF. AT 10 METERS
(Dimensionless)
7.203E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.60E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.43E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.98E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.61E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.12E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 3.25E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.66E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.03E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161130
PAGE: 3
START TIME: 11:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.203	5.42	8.44	NO DATA		15.950	-1.747	-1.649	-0.573	-0.475
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.301	15.377	15.475	8.328E-03	68.23	6.722E-03	11.045	16.188	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.238 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.265

Z/L AT 10 METERS
-0.247

MONIN-OBUKHOV LENGTH
(Meters)
-4.048E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.58E-02

HUMIDITY FLUX
(Kg/sec m2)
3.75E-05

SEN. HEAT FLUX
(Watts/m2)
1.27E 01

TOTAL HEAT FLUX
(Watts/m2)
-5.39E 02

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.703E-01

SCALING SPEC. HUMID.
(Kg/Kg)
-1.787E-04

SCALING POT. TEMP.
(Kelvin)
-6.002E-02

SCALING V. POT. TEMP.
(Kelvin)
2.538E 00

ROUGHNESS LENGTH
(Meters)
1.456E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
9.876E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
2.899E-02

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
3.754E-05

WITH POT. TEMPERATURE
(Meter Kel./sec)
1.022E-02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.234

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL
(Millibar)
18.115

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.358E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161200
START TIME: 12: 0: 0 PST
END TIME: 12:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.868	4.892	2.880	2.730	5.355	4.533	4.871

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.850	4.142	2.475	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141412	1421 143028

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.7	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.141	5.61	9.04	NO DATA	310.6	1021.5	6.32E 02	15.850	287.382

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.303	5.43	8.93	NO DATA	0.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.322	15.365	15.545	8.675E-03	71.34	7.004E-03	11.502	16.124	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.364	15.518	15.579	8.607E-03	70.08	6.953E-03	11.418	16.293	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161200
PAGE: 2
START TIME: 12: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.480 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.521

Z/L AT 10 METERS
-0.485

Z/L AT Z1
-0.895

Z/L AT Z2
-0.303

MONIN-OBUKHOV LENGTH
(Meters)
-2.062E 01

PSI1 AT Z1= 1.028764
PSI1 AT Z2= 0.575759
PSI2 AT Z1= 0.695285
PSI2 AT Z2= 0.382389

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.13E-02

HUMIDITY FLUX
(Kg/sec m2)
-3.72E-06

SEN. HEAT FLUX
(Watts/m2)
3.09E 00

TOTAL HEAT FLUX
(Watts/m2)
-6.38E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.233

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
9.574E-02

SCALING SPEC. HUMD.
(Kg/Kg)
3.150E-05

SCALING POT. TEMP.
(Kelvin)
-2.589E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.080E-02

ROUGHNESS LENGTH
(Meters)
1.843E-08

DRAG COEF. AT 10 METERS
(Dimensionless)
9.165E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.73E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 5.15E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.23E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.40E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.66E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.50E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.83E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.27E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161200
PAGE: 3
START TIME: 12: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.231	5.50	8.98	NO DATA		15.850	-1.619	-1.521	-0.400	-0.302
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.329	15.450	15.548	8.639E-03	70.65	6.977E-03	11.458	16.218	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.213 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.239

Z/L AT 10 METERS
-0.222

MONIN-OBUKHOV LENGTH (Meters)
-4.505E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.71E-02

HUMIDITY FLUX (Kg/sec m2)
3.53E-05

SEN. HEAT FLUX (Watts/m2)
1.21E 01

TOTAL HEAT FLUX (Watts/m2)
-5.33E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.734E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.650E-04

SCALING POT. TEMP. (Kelvin)
-5.593E-02

SCALING V. POT. TEMP. (Kelvin)
2.466E 00

ROUGHNESS LENGTH (Meters)
1.502E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.931E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.006E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.527E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.697E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.999

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.350E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161230
START TIME: 12:30: 0 PST
END TIME: 12:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.850	4.901	3.060	2.892	5.324	4.345	4.863

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.750	4.195	2.475	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141001	1421 142819

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.8	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.100	5.95	8.94	NO DATA	310.3	1021.0	6.06E 02	15.750	287.351

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.282	5.75	8.98	NO DATA	0.16

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.281	15.316	15.497	8.621E-03	71.07	6.962E-03	11.428	16.081	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.343	15.502	15.563	8.637E-03	70.41	6.980E-03	11.457	16.271	NO DATA

* CONTINUED ON PAGE

RUN NUMBER: 7811161230
PAGE: 2
START TIME: 12:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.495 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.536

Z/L AT 10 METERS
-0.499

Z/L AT Z1
-0.921

Z/L AT Z2
-0.312

MONIN-OBUKHOV LENGTH
(Meters)
-2.004E 01

PSI1 AT Z1= 1.042738
PSI1 AT Z2= 0.585782
PSI2 AT Z1= 0.704863
PSI2 AT Z2= 0.389325

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.65E-02

HUMIDITY FLUX
(Kg/sec m2)
1.55E-06

SEN. HEAT FLUX
(Watts/m2)
5.56E 00

TOTAL HEAT FLUX
(Watts/m2)
-5.97E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.233

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.156E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.089E-05

SCALING POT. TEMP.
(Kelvin)
-3.854E-02

SCALING V. POT. TEMP.
(Kelvin)
-4.092E-02

ROUGHNESS LENGTH
(Meters)
2.191E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
1.337E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.08E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.77E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.28E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.67E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 3.03E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -4.34E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.23E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.16E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161230
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START TIME: 12:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.201	5.83	8.96	NO DATA	15.750	-1.549	-1.451	-0.331	-0.233

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.299	15.419	15.517	8.629E-03	70.70	6.971E-03	11.444	16.187	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.173 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.196

Z/L AT 10 METERS
-0.182

MONIN-OBUKHOV LENGTH (Meters)
-5.484E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.25E-02

HUMIDITY FLUX (Kg/sec m2)
3.68E-05

SEN. HEAT FLUX (Watts/m2)
1.22E 01

TOTAL HEAT FLUX (Watts/m2)
-5.03E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.856E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.609E-04

SCALING POT. TEMP. (Kelvin)
-5.267E-02

SCALING V. POT. TEMP. (Kelvin)
2.174E 00

ROUGHNESS LENGTH (Meters)
1.691E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.015E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.446E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.681E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.777E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.885

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.341E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161300
START TIME: 13: 0: 0 PST
END TIME: 13:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): .6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.832	4.908	3.026	2.839	5.311	4.066	4.682

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.738	4.239	2.476	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140272	1421 142522

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.8	60.24

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.027	5.89	8.84	NO DATA		304.2	1020.8	5.67E 02	15.738	287.300

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)
14.252	5.65	9.02	NO DATA		-0.04

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.208	15.235	15.416	8.566E-03	70.94	6.918E-03	11.353	16.005	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.313	15.476	15.537	8.663E-03	70.75	7.001E-03	11.491	16.240	NO DATA

* CONTINUED ON PAGE 2

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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.607 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.654

Z/L AT 10 METERS
-0.609

Z/L AT Z1
-1.123

Z/L AT Z2
-0.381

MONIN-OBUKHOV LENGTH
(Meters)
-1.643E 01

PSI1 AT Z1= 1.142587
PSI1 AT Z2= 0.658509
PSI2 AT Z1= 0.773103
PSI2 AT Z2= 0.439689

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.48E-02

HUMIDITY FLUX
(Kg/sec m2)
9.26E-06

SEN. HEAT FLUX
(Watts/m2)
1.18E 01

TOTAL HEAT FLUX
(Watts/m2)
-5.32E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.233

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.419E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-5.292E-05

SCALING POT. TEMP.
(Kelvin)
-6.673E-02

SCALING V. POT. TEMP.
(Kelvin)
-7.658E-02

ROUGHNESS LENGTH
(Meters)
7.163E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2.015E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.44E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.42E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.06E-02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.22E-02

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.47E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -8.94E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -7.09E 00

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -6.18E 00

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161300
PAGE: 3
START TIME: 13: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.153	5.74	8.94	NO DATA		15.738	-1.585	-1.487	-0.369	-0.271
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.251	15.369	15.467	8.617E-03	70.81	6.962E-03	11.426	16.136	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.185 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.209

Z/L AT 10 METERS
-0.194

MONIN-OBUKHOV LENGTH (Meters)
-5.153E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.10E-02

HUMIDITY FLUX (Kg/sec m2)
3.63E-05

SEN. HEAT FLUX (Watts/m2)
1.23E 01

TOTAL HEAT FLUX (Watts/m2)
-4.65E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.823E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.614E-04

SCALING POT. TEMP. (Kelvin)
-5.405E-02

SCALING V. POT. TEMP. (Kelvin)
2.048E 00

ROUGHNESS LENGTH (Meters)
1.638E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.009E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.324E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.627E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.855E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.871

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.340E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161330
START TIME: 13:30: 0 PST
END TIME: 13:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.779	4.867	3.666	3.388	5.305	3.680	4.734

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.725	4.223	2.477	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141910	1421 143715

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.8	60.22

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.191	7.13	8.54	NO DATA	306.0	1020.7	5.13E 02	15.725	287.441

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.372	6.70	8.78	NO DATA	-0.24

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.372	15.375	15.556	8.387E-03	68.76	6.777E-03	11.122	16.176	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.433	15.576	15.637	8.519E-03	69.07	6.889E-03	11.305	16.366	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161330
PAGE: 2
START TIME: 13:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.114 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.132

Z/L AT 10 METERS
-0.123

Z/L AT Z1
-0.227

Z/L AT Z2
-0.077

MONIN-OBUKHOV LENGTH
(Meters)
-8.122E 01

PSI1 AT Z1= 0.480456
PSI1 AT Z2= 0.220736
PSI2 AT Z1= 0.3.6574
PSI2 AT Z2= 0.140339

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.03E-02

HUMIDITY FLUX
(Kg/sec m2)
1.30E-05

SEN. HEAT FLUX
(Watts/m2)
7.19E 00

TOTAL HEAT FLUX
(Watts/m2)
-4.74E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.808E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-5.813E-05

SCALING POT. TEMP.
(Kelvin)
-3.192E-0

SCALING V. POT. TEMP.
(Kelvin)
-4.247E-02

ROUGHNESS LENGTH
(Meters)
1.658E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
3.271E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.27E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.12E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.15E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -8.18E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.94E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -8.14E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.48E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.11E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161330
PAGE: 3
START TIME: 13:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.292	6.87	8.67	NO DATA		15.725	-1.433	-1.335	-0.239	-0.141
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.390	15.486	15.584	8.457E-03	68.90	6.836E-03	11.219	16.282	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.099 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.116

Z/L AT 10 METERS
-0.108

MONIN-OBUKHOV LENGTH (Meters)
-9.274E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.29E-02

HUMIDITY FLUX (Kg/sec m2)
4.47E-05

SEN. HEAT FLUX (Watts/m2)
1.30E 01

TOTAL HEAT FLUX (Watts/m2)
-3.90E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.260E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.607E-04

SCALING POT. TEMP. (Kelvin)
-4.618E-02

SCALING V. POT. TEMP. (Kelvin)
1.385E 00

ROUGHNESS LENGTH (Meters)
2.408E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.083E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.108E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.475E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.044E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT V/ (ITc[illegible]/Kg)
5.[illegible]E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.856

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.339E-02

* END

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161440
START TIME: 14:40: 0 PST
END TIME: 14:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.795	4.878	3.904	3.599	5.282	2.613	4.794

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.700	4.170	2.480	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143399	1421 144904

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	120	0	0	0	0	0	114.8	60.17

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.340	7.59	8.66	NO DATA	308.0	1020.3	3.64E 02	15.700	287.575

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.490	7.11	8.84	NO DATA	-0.61

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.521	15.535	15.716	8.453E-03	68.67	6.837E-03	11.216	16.333	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.552	15.701	15.762	8.552E-03	68.84	6.920E-03	11.353	16.492	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER 7811161440
PAGE 2
START TIME 14 40 0 PST
START DATE 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.046 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.056

Z/L AT 10 METERS
-0.052

Z/L AT Z1
-0.097

Z/L AT Z2
-0.033

MONIN-OBUKHOV LENGTH
(Meters)
-1.906E 02

PSI1 AT Z1= 0.263503
PSI1 AT Z2= 0.107763
PSI2 AT Z1= 0.168829
PSI2 AT Z2= 0.066801

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.99E-02

HUMIDITY FLUX
(Kg/sec m2)
8.92E-06

SEN. HEAT FLUX
(Watts/m2)
3.36E 00

TOTAL HEAT FLUX
(Watts/m2)
-3.39E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.800E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-4.025E-05

SCALING POT. TEMP.
(Kelvin)
-1.498E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.232E-02

ROUGHNESS LENGTH
(Meters)
6.688E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.239E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.79E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.38E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.12E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.65E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.94E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.18E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.16E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.12E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161440
PAGE: 3
START TIME: 14:40: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-D MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 8/SEC
DATA AVERAGING PERIOD: 20 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.424	7.29	8.76	NO DATA		15.700	-1.276	-1.178	-0.073	0.025
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.522	15.627	15.725	8.506E-03	68.74	6.881E-03	11.289	16.422	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.074 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.088

Z/L AT 10 METERS
-0.082

MONIN-OBUKHOV LENGTH (Meters)
-1.218E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.28E-02

HUMIDITY FLUX (Kg/sec m2)
4.69E-05

SEN. HEAT FLUX (Watts/m2)
1.23E 01

TOTAL HEAT FLUX (Watts/m2)
-2.37E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.432E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.566E-04

SCALING POT. TEMP. (Kelvin)
-4.074E-02

SCALING V. POT. TEMP. (Kelvin)
7.816E-01

ROUGHNESS LENGTH (Meters)
2.758E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.111E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.914E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.687E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.907E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.827

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.337E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161500
START TIME: 15: 0: 0 PST
END TIME: 15:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.864	4.938	3.654	3.412	5.271	2.110	4.780

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.664	4.196	2.481	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143590	1421 145066

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.8	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.359	7.10	9.08	NO DATA	307.5	1020.2	2.94E 02	15.664	287.593

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.507	6.75	9.20	NO DATA	-0.72

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.540	15.589	15.770	8.696E-03	70.56	7.035E-03	11.539	16.353	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.568	15.747	15.808	8.760E-03	70.44	7.090E-03	11.629	16.510	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161500
PAGE: 2
START TIME: 15: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.075 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.089

Z/L AT 10 METERS
-0.083

Z/L AT Z1
-0.154

Z/L AT Z2
-0.052

MONIN-OBUKHOV LENGTH
(Meters)
-1.201E 02

PSI1 AT Z1= 0.369311
PSI1 AT Z2= 0.160428
PSI2 AT Z1= 0.240365
PSI2 AT Z2= 0.100725

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.49E-02

HUMIDITY FLUX
(Kg/sec m2)
4.87E-06

SEN. HEAT FLUX
(Watts/m2)
2.50E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.80E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.422E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.783E-05

SCALING POT. TEMP.
(Kelvin)
-1.412E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.931E-02

ROUGHNESS LENGTH
(Meters)
4.252E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.022E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.57E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.57E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.83E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.87E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.46E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.70E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.35E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.45E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161500
PAGE: 3
START TIME: 15: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.441	6.89	9.15	NO DATA		15.664	-1.223	-1.125	0.013	0.111
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.539	15.677	15.775	8.730E-03	70.48	7.064E-03	11.587	16.440	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978).

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.085 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.100

Z/L AT 10 METERS
-0.093

MONIN-OBUKHOV LENGTH (Meters)
-1.072E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.33E-02

HUMIDITY FLUX (Kg/sec m2)
4.19E-05

SEN. HEAT FLUX (Watts/m2)
1.14E 01

TOTAL HEAT FLUX (Watts/m2)
-1.79E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.268E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.503E-04

SCALING POT. TEMP. (Kelvin)
-4.024E-02

SCALING V. POT. TEMP. (Kelvin)
6.360E-01

ROUGHNESS LENGTH (Meters)
2.422E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.084E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.142E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.194E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.125E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.786

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.334E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161530
START TIME: 15:30: 0 PST
END TIME: 15:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.903	4.974	3.647	3.390	5.262	1.453	4.683

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.629	4.196	2.481	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142897	1421 144625

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.8	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.290	7.09	9.33	NO DATA	304.2	1020.0	2.03E 02	15.629	287.536

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.462	6.71	9.42	NO DATA	-0.82

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.471	15.540	15.720	8.842E-03	72.05	7.152E-03	11.729	16.280	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.524	15.721	15.782	8.891E-03	71.69	7.196E-03	11.801	16.463	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161530
PAGE: 2
START TIME: 15:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.123 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.141

Z/L AT 10 METERS
-0.132

Z/L AT Z1
-0.243

Z/L AT Z2
-0.082

MONIN-OBUKHOV LENGTH
(Meters)
-7.596E 01

PSI1 AT Z1= 0.501515
PSI1 AT Z2= 0.232692
PSI2 AT Z1= 0.331090
PSI2 AT Z2= 0.148274

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.34E-02

HUMIDITY FLUX
(Kg/sec m2)
4.69E-06

SEN. HEAT FLUX
(Watts/m2)
5.75E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.85E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.648E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.314E-05

SCALING POT. TEMP.
(Kelvin)
-2.805E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.249E-02

ROUGHNESS LENGTH
(Meters)
4.663E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2.716E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.85E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.42E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.36E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.21E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.12E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.04E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.69E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.46E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161530
PAGE: 3
START TIME: 15:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.386	6.86	9.37	NO DATA		15.629	-1.243	-1.145	0.011	0.109
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.484	15.640	15.738	8.868E-03	71.84	7.175E-03	11.768	16.381	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.088 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.103

Z/L AT 10 METERS
-0.096

MONIN-OBUKHOV LENGTH (Meters)
-1.043E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.26E-02

HUMIDITY FLUX (Kg/sec m2)
4.02E-05

SEN. HEAT FLUX (Watts/m2)
1.15E 01

TOTAL HEAT FLUX (Watts/m2)
-9.19E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.255E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.450E-04

SCALING POT. TEMP. (Kelvin)
-4.089E-02

SCALING V. POT. TEMP. (Kelvin)
3.273E-01

ROUGHNESS LENGTH (Meters)
2.398E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.082E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.087E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.025E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.221E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.747

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.332E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811161600
START TIME: 16: 0: 0 PST
END TIME: 16:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.899	4.988	3.981	3.629	5.253	0.800	4.576

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.593	4.189	2.480	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141929	1421 143687

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.8	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.193	7.73	9.32	NO DATA	300.6	1019.9	1.12E 02	15.593	287.441

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.369	7.17	9.50	NO DATA	-0.87

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.374	15.442	15.623	8.839E-03	72.46	7.149E-03	11.722	16.178	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.430	15.634	15.695	8.942E-03	72.52	7.236E-03	11.866	16.363	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161600
PAGE: 2
START TIME: 16: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.059 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.071

Z/L AT 10 METERS
-0.066

Z/L AT Z1
-0.121

Z/L AT Z2
-0.041

MONIN-OBUKHOV LENGTH
(Meters)
-1.520E 02

PSI1 AT Z1= 0.312168
PSI1 AT Z2= 0.131377
PSI2 AT Z1= 0.201571
PSI2 AT Z2= 0.081926

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.01E-02

HUMIDITY FLUX
(Kg/sec m2)
1.17E-05

SEN. HEAT FLUX
(Watts/m2)
7.62E 00

TOTAL HEAT FLUX
(Watts/m2)
-7.50E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.210E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-4.308E-05

SCALING POT. TEMP.
(Kelvin)
-2.771E-02

SCALING V. POT. TEMP.
(Kelvin)
-3.562E-02

ROUGHNESS LENGTH
(Meters)
8.087E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
4.886E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.72E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.81E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.67E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -7.29E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.58E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.10E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -1.71E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.33E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161600
PAGE: 3
START TIME: 16: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.291	7.39	9.41	NO DATA		15.593	-1.302	-1.204	-0.045	0.053
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.389	15.548	15.646	8.894E-03	72.47	7.195E-03	11.798	16.281	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.073 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.087

Z/L AT 10 METERS
-0.081

MONIN-OBUKHOV LENGTH (Meters)
-1.240E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.50E-02

HUMIDITY FLUX (Kg/sec m2)
4.28E-05

SEN. HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT FLUX (Watts/m2)
6.78E 00

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.469E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.409E-04

SCALING POT. TEMP. (Kelvin)
-4.124E-02

SCALING V. POT. TEMP. (Kelvin)
-2.206E-02

ROUGHNESS LENGTH (Meters)
2.838E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.118E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.097E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.283E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.018E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.706

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.329E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 1161630
START TIME: 30: 0 PST
END TIME: 59: 50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.878	4.954	4.337	3.980	5.252	0.274	4.634

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.557	4.186	2.478	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141153	1421 142689

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.8	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.115	8.42	9.18	NO DATA	302.6	1019.9	3.82E 01	15.557	287.352

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.269	7.84	9.30	NO DATA	-0.88

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.296	15.353	15.533	8.762E-03	72.16	7.084E-03	11.616	16.097	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.330	15.517	15.578	8.826E-03	72.02	7.140E-03	11.708	16.258	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161630
PAGE: 2
START TIME: 16:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.034 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.043

Z/L AT 10 METERS
-0.040

Z/L AT Z1
-0.073

Z/L AT Z2
-0.025

MONIN-OBUKHOV LENGTH
(Meters)
-2.525E 02

PSI1 AT Z1= 0.211633
PSI1 AT Z2= 0.083791
PSI2 AT Z1= 0.134314
PSI2 AT Z2= 0.051608

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.57E-02

HUMIDITY FLUX
(Kg/sec m2)
6.97E-06

SEN. HEAT FLUX
(Watts/m2)
4.28E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.67E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.127E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.662E-05

SCALING POT. TEMP.
(Kelvin)
-1.616E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.112E-02

ROUGHNESS LENGTH
(Meters)
1.653E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
4.522E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.83E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.66E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.43E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.49E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.65E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.78E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.93E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.24E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161630
PAGE: 3
START TIME: 16:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PR NT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.201	8.07	9.24	NO DATA		15.557	-1.356	-1.258	-0.113	-0.015
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.299	15.444	15.542	8.795E-03	72.07	7.114E-03	11.665	16.186	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.058 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.070

Z/L AT 10 METERS
-0.065

MONIN-OBUKHOV LENGTH (Meters)
-1.539E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.32E-02

HUMIDITY FLUX (Kg/sec m2)
4.75E-05

SEN. HEAT FLUX (Watts/m2)
1.41E 01

TOTAL HEAT FLUX (Watts/m2)
9.31E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.751E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.403E-04

SCALING POT. TEMP. (Kelvin)
-4.122E-02

SCALING V. POT. TEMP. (Kelvin)
-2.720E-01

ROUGHNESS LENGTH (Meters)
3.482E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.162E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.566E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.752E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.134E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
F 893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.665

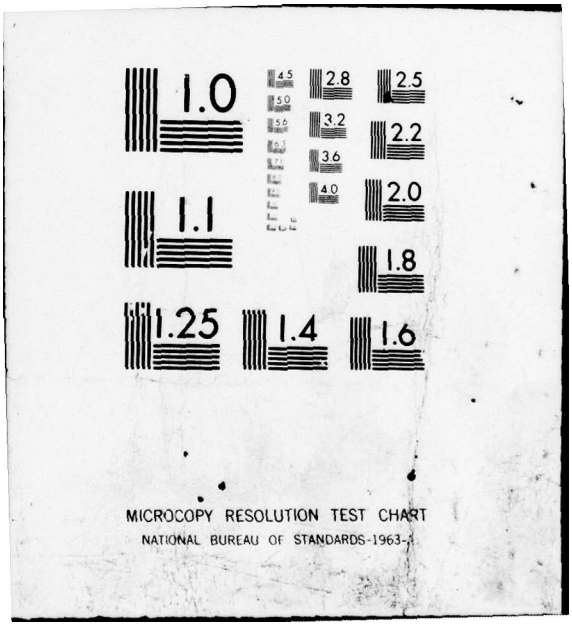
ABS. HUMID. AT WT LEVEL (Kg/m3)
1.326E-02

* END

AD-A074 826 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
MICROMETEOROLOGICAL DATA REPORT FOR THE NOVEMBER 1978 ELECTRO-O--ETC(U)
AUG 79 T V BLANC
UNCLASSIFIED NRL-MR-4056 SBIE-AD-E000 325 NL

5 OF 6
AD A074826




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811161700
START TIME: 17: 0: 0 PST
END TIME: 17:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00 VOLT. REF. A	No. 01 TEMP. STRUC. 1	No. 02 TEMP. STRUC. 2	No. 03 DEW POINT1	No. 04 DEW POINT2	No. 05 WIND SPEED1	No. 06 WIND SPEED2	No. 07 BAR. PRES.	No. 08 SKY RAD.	No. 09 WIND DIR.
6.204	0.000	0.000	4.935	5.007	4.892	4.487	5.260	0.109	4.588

No. 10 BULK WT TEMP	No. 11 AC FREQUENCY	No. 12 AC VOLTAGE	No. 13 MANUAL FLAG	No. 14 ZERO REF.	No. 15 SPARE A	No. 16 SPARE B	No. 17 VOLT. REF. B
5.521	4.146	2.473	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1 AIR TEMP. 1	No. 2 AIR TEMP. 2
1411 140401	1421 141972

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.15

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.040	9.50	9.51	NO DATA	301.0	1020.0	1.52E 01	15.521	287.279

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.197	8.82	9.61	NO DATA	-0.86

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.221	15.305	15.486	8.962E-03	74.16	7.243E-03	11.879	16.018	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.259	15.471	15.532	9.016E-03	73.89	7.291E-03	11.957	16.182	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161700
PAGE: 2
START TIME: 17: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.028 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.035

Z/L AT 10 METERS
-0.032

Z/L AT Z1
-0.060

Z/L AT Z2
-0.020

MONIN-OBUKHOV LENGTH
(Meters)
-3.088E 02

PSI1 AT Z1= 0.179753
PSI1 AT Z2= 0.069696
PSI2 AT Z1= 0.113338
PSI2 AT Z2= 0.042756

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.31E-02

HUMIDITY FLUX
(Kg/sec m2)
6.68E-06

SEN. HEAT FLUX
(Watts/m2)
5.34E 00

TOTAL HEAT FLUX
(Watts/m2)
6.60E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.437E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.227E-05

SCALING POT. TEMP.
(Kelvin)
-1.759E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.180E-02

ROUGHNESS LENGTH
(Meters)
2.086E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
5.939E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.80E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.79E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.78E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.69E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.44E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.12E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.69E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.17E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161700
PAGE: 3
START TIME: 17: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14. 128	9. 08	9. 57	NO DATA		15. 521	-1. 393	-1. 295	-0. 124	-0. 026
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10. 00	14. 226	15. 397	15. 495	8. 991E-03	73. 99	7. 269E-03	11. 920	16. 110	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0. 041 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10. 75

Z/L AT GMH
-0. 051

Z/L AT 10 METERS
-0. 047

MONIN-OBUKHOV LENGTH (Meters)
-2. 110E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1. 25E-01

HUMIDITY FLUX (Kg/sec m2)
5. 08E-05

SEN. HEAT FLUX (Watts/m2)
1. 60E 01

TOTAL HEAT FLUX (Watts/m2)
1. 26E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3. 184E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1. 296E-04

SCALING POT. TEMP. (Kelvin)
-4. 027E-02

SCALING V. POT. TEMP. (Kelvin)
-3. 179E-01

ROUGHNESS LENGTH (Meters)
4. 622E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1. 229E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1. 014E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5. 081E-05

WITH POT. TEMPERATURE (Meter Kel. /sec)
1. 282E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1. 231

AIR SPECIFIC HEAT (ITcal. /Kg Kel.)
2. 416E 02

WATER LAT. HEAT VAP. (ITcal. /Kg)
5. 893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17. 624

ABS. HUMID. AT WT LEVEL (Kg/m3)
1. 323E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161730
START TIME: 17:30: 0 PST
END TIME: 17:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.924	4.999	4.670	4.250	5.273	0.106	4.763

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.486	4.138	2.469	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140237	1421 141737

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.024	9.07	9.44	NO DATA	306.9	1020.2	1.48E 01	15.486	287.259

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.174	8.36	9.56	NO DATA	-0.79

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.205	15.282	15.463	8.921E-03	73.89	7.208E-03	11.823	16.001	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.235	15.443	15.504	8.988E-03	73.76	7.266E-03	11.918	16.158	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161730
PAGE: 2
START TIME: 17:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.021 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.026

Z/L AT 10 METERS
-0.025

Z/L AT Z1
-0.045

Z/L AT Z2
-0.015

MONIN-OBUKHOV LENGTH
(Meters)
-4.066E 02

PSI1 AT Z1= 0.142759
PSI1 AT Z2= 0.053972
PSI2 AT Z1= 0.089267
PSI2 AT Z2= 0.032956

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.58E-02

HUMIDITY FLUX
(Kg/sec m2)
8.17E-06

SEN. HEAT FLUX
(Watts/m2)
4.34E 00

TOTAL HEAT FLUX
(Watts/m2)
9.72E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.480E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.675E-05

SCALING POT. TEMP.
(Kelvin)
-1.406E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.903E-02

ROUGHNESS LENGTH
(Meters)
4.904E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
6.152E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.08E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.83E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.07E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.15E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.41E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.77E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3:36E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.49E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161730
PAGE: 3
START TIME: 17:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.107	8.64	9.51	NO DATA		15.486	-1.379	-1.281	-0.114	-0.016
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.205	15.372	15.470	8.956E-03	73.80	7.239E-03	11.874	16.088	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.048 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.058

Z/L AT 10 METERS
-0.054

MONIN-OBUKHOV LENGTH (Meters)
-1.843E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.10E-01

HUMIDITY FLUX (Kg/sec m2)
4.84E-05

SEN. HEAT FLUX (Watts/m2)
1.52E 01

TOTAL HEAT FLUX (Watts/m2)
1.20E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.992E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.313E-04

SCALING POT. TEMP. (Kelvin)
-4.070E-02

SCALING V. POT. TEMP. (Kelvin)
-3.213E-01

ROUGHNESS LENGTH (Meters)
4.093E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.200E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.950E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.839E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.218E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.585

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.320E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161800
START TIME: 18: 0: 0 PST
END TIME: 18:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.889	4.963	4.740	4.359	5.269	0.105	4.759

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.450	4.137	2.472	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140661	1421 142110

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.066	9.20	9.23	NO DATA	306.8	1020.1	1.47E 01	15.450	287.299

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.211	8.57	9.35	NO DATA	-0.70

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.247	15.307	15.488	8.794E-03	72.65	7.107E-03	11.656	16.045	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.272	15.462	15.524	8.858E-03	72.53	7.162E-03	11.747	16.197	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161800
PAGE: 2
START TIME: 18: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.022 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.027

Z/L AT 10 METERS
-0.026

Z/L AT Z1
-0.047

Z/L AT Z2
-0.016

MONIN-OBUKHOV LENGTH
(Meters)
-3.911E 02

PSI1 AT Z1= 0.147549
PSI1 AT Z2= 0.055969
PSI2 AT Z1= 0.092366
PSI2 AT Z2= 0.034196

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.10E-02

HUMIDITY FLUX
(Kg/sec m2)
7.02E-06

SEN. HEAT FLUX
(Watts/m2)
3.25E 00

TOTAL HEAT FLUX
(Watts/m2)
5.90E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.225E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.560E-05

SCALING POT. TEMP.
(Kelvin)
-1.173E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.650E-02

ROUGHNESS LENGTH
(Meters)
9.097E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
4.949E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.33E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.57E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.55E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.59E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.57E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.85E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -4.03E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.87E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161800
PAGE: 3
START TIME: 18: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.147	8.82	9.30	NO DATA	15.450	-1.303	-1.205	-0.057	0.041

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.245	15.393	15.491	8.828E-03	72.57	7.136E-03	11.705	16.130	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.043 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.052

Z/L AT 10 METERS
-0.049

MONIN-OBUKHOV LENGTH (Meters)
-2.058E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.16E-01

HUMIDITY FLUX (Kg/sec m2)
5.06E-05

SEN. HEAT FLUX (Watts/m2)
1.47E 01

TOTAL HEAT FLUX (Watts/m2)
1.25E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.069E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.337E-04

SCALING POT. TEMP. (Kelvin)
-3.836E-02

SCALING V. POT. TEMP. (Kelvin)
-3.263E-01

ROUGHNESS LENGTH (Meters)
4.302E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.212E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.422E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.056E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.178E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.544

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.317E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161830
START TIME: 18:30: 0 PST
END TIME: 18:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.787	4.872	4.597	4.228	5.278	0.101	4.872

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.414	4.144	2.471	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141622	1421 143007

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.162	8.92	8.62	NO DATA	310.6	1020.3	1.41E 01	15.414	287.391

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.301	8.32	8.81	NO DATA	-0.58

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.343	15.353	15.534	8.433E-03	69.26	6.817E-03	11.182	16.146	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.362	15.508	15.569	8.538E-03	69.53	6.905E-03	11.327	16.291	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161830
PAGE: 2
START TIME: 18:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.018 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.023

Z/L AT 10 METERS
-0.021

Z/L AT Z1
-0.039

Z/L AT Z2
-0.013

MONIN-OBUKHOV LENGTH
(Meters)
-4.763E 02

PSI1 AT Z1= 0.124601
PSI1 AT Z2= 0.046507
PSI2 AT Z1= 0.077571
PSI2 AT Z2= 0.028334

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.47E-02

HUMIDITY FLUX
(Kg/sec m2)
1.05E-05

SEN. HEAT FLUX
(Watts/m2)
2.29E 00

TOTAL HEAT FLUX
(Watts/m2)
1.42E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.107E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-4.052E-05

SCALING POT. TEMP.
(Kelvin)
-8.730E-03

SCALING V. POT. TEMP.
(Kelvin)
-1.608E-02

ROUGHNESS LENGTH
(Meters)
6.477E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
4.440E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.08E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.90E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.92E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.53E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.66E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.17E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -5.42E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.94E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DAT

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161830
PAGE: 3
START TIME: 18:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.239	8.55	8.72	NO DATA		15.414	-1.175	-1.077	0.025	0.123
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.337	15.439	15.537	8.489E-03	69.39	6.864E-03	11.259	16.227	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.042 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.052

Z/L AT 10 METERS
-0.048

MONIN-OBUKHOV LENGTH (Meters)
-2.069E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.08E-01

HUMIDITY FLUX (Kg/sec m2)
5.26E-05

SEN. HEAT FLUX (Watts/m2)
1.30E 01

TOTAL HEAT FLUX (Watts/m2)
1.29E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.957E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.443E-04

SCALING POT. TEMP. (Kelvin)
-3.542E-02

SCALING V. POT. TEMP. (Kelvin)
-3.494E-01

ROUGHNESS LENGTH (Meters)
4.001E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.195E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.743E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.256E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.047E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.504

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.314E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161900
START TIME: 19: 0: 0 PST
END TIME: 19:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.818	4.908	4.652	4.211	5.278	0.101	4.788

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.379	4.144	2.470	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141555	1421 143027

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.7	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.155	9.03	8.80	NO DATA		307.8	1020.3	1.41E 01	15.379	287.389

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)
14.303	8.29	9.02	NO DATA		-0.44

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.336	15.361	15.541	8.535E-03	70.12	6.899E-03	11.317	16.139	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.364	15.527	15.588	8.660E-03	70.52	7.004E-03	11.489	16.293	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161900
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START TIME: 19: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.017 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.022

Z/L AT 10 METERS
-0.020

Z/L AT Z1
-0.037

Z/L AT Z2
-0.013

MONIN-OBUKHOV LENGTH
(Meters)
-4.980E 02

PSI1 AT Z1= 0.119850
PSI1 AT Z2= 0.044582
PSI2 AT Z1= 0.074524
PSI2 AT Z2= 0.027145

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-8.29E-02

HUMIDITY FLUX
(Kg/sec m2)
1.54E-05

SEN. HEAT FLUX
(Watts/m2)
4.10E 00

TOTAL HEAT FLUX
(Watts/m2)
2.80E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.232

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.594E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-4.818E-05

SCALING POT. TEMP.
(Kelvin)
-1.268E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.138E-02

ROUGHNESS LENGTH
(Meters)
9.060E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
6.730E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.50E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.06E-05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.79E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.70E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.35E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -9.82E 03

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.73E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.21E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161900
PAGE: 3
START TIME: 19: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.238	8.58	8.91	NO DATA		15.379	-1.141	-1.043	0.074	0.172
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.336	15.453	15.551	8.601E-03	70.31	6.954E-03	11.408	16.225	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.041 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.050

Z/L AT 10 METERS
-0.047

MONIN-OBUKHOV LENGTH (Meters)
-2.137E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.08E-01

HUMIDITY FLUX (Kg/sec m2)
5.11E-05

SEN. HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT FLUX (Watts/m2)
1.25E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.966E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.399E-04

SCALING POT. TEMP. (Kelvin)
-3.450E-02

SCALING V. POT. TEMP. (Kelvin)
-3.378E-01

ROUGHNESS LENGTH (Meters)
4.025E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.196E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.797E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.110E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.023E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.464

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.312E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811161930
START TIME: 19:30: 0 PST
END TIME: 19:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.971	5.040	4.642	4.233	5.285	0.107	4.770

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.343	4.175	2.470	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141566	1421 143060

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.17

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.157	9.01	9.70	NO DATA	307.2	1020.4	1.50E 01	15.343	287.391

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.306	8.33	9.81	NO DATA	-0.30

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.337	15.438	15.618	9.072E-03	74.53	7.333E-03	12.030	16.140	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.367	15.597	15.659	9.136E-03	74.37	7.387E-03	12.120	16.297	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811161930
PAGE: 2
START TIME: 19:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.022 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.027

Z/L AT 10 METERS
-0.026

Z/L AT Z1
-0.047

Z/L AT Z2
-0.016

MONIN-OBUKHOV LENGTH
(Meters)
-3.917E 02

PSI1 AT Z1= 0.147383
PSI1 AT Z2= 0.055900
PSI2 AT Z1= 0.092259
PSI2 AT Z2= 0.034153

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.19E-02

HUMIDITY FLUX
(Kg/sec m2)
7.55E-06

SEN. HEAT FLUX
(Watts/m2)
4.16E 00

TOTAL HEAT FLUX
(Watts/m2)
7.81E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.417E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.535E-05

SCALING POT. TEMP.
(Kelvin)
-1.383E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.857E-02

ROUGHNESS LENGTH
(Meters)
3.780E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
5.841E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.88E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -5.52E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.01E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.04E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PS1)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.45E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.87E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.42E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.55E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811161930
PAGE: 3
START TIME: 19:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.240	8.59	9.76	NO DATA		15.343	-1.103	-1.005	0.183	0.281
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.338	15.526	15.624	9.106E-03	74.43	7.362E-03	12.077	16.227	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.039 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.048

Z/L AT 10 METERS
-0.045

MONIN-OBUKHOV LENGTH (Meters)
-2.216E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.09E-01

HUMIDITY FLUX (Kg/sec m2)
4.52E-05

SEN. HEAT FLUX (Watts/m2)
1.24E 01

TOTAL HEAT FLUX (Watts/m2)
1.09E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.974E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.233E-04

SCALING POT. TEMP. (Kelvin)
-3.345E-02

SCALING V. POT. TEMP. (Kelvin)
-2.938E-01

ROUGHNESS LENGTH (Meters)
4.046E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.197E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.844E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.516E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.947E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.424

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.309E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811162000
START TIME: 20: 0: 0 PST
END TIME: 20:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.084	5.134	4.308	3.987	5.285	0.119	4.843

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.308	4.209	2.467	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141219	1421 142729

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.122	8.37	10.37	NO DATA	309.7	1020.4	1.66E 01	15.308	287.357

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.273	7.86	10.37	NO DATA	-0.15

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.303	15.461	15.642	9.489E-03	78.12	7.668E-03	12.581	16.104	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.334	15.613	15.675	9.486E-03	77.37	7.670E-03	12.583	16.262	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162000
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START TIME: 20: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.041 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.050

Z/L AT 10 METERS
-0.047

Z/L AT Z1
-0.086

Z/L AT Z2
-0.029

MONIN-OBUKHOV LENGTH
(Meters)
-2.149E 02

PSI1 AT Z1= 0.240313
PSI1 AT Z2= 0.096889
PSI2 AT Z1= 0.153344
PSI2 AT Z2= 0.059889

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.47E-02

HUMIDITY FLUX
(Kg/sec m2)
1.32E-07

SEN. HEAT FLUX
(Watts/m2)
3.58E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.27E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.906E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-5.612E-07

SCALING POT. TEMP.
(Kelvin)
-1.506E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.549E-02

ROUGHNESS LENGTH
(Meters)
3.648E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.632E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.14E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.18E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.16E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.26E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.84E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -8.43E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.14E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.05E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162000
PAGE: 3
START TIME: 20: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.206	8.05	10.37	NO DATA		15.308	-1.102	-1.004	0.238	0.336
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.304	15.546	15.644	9.487E-03	77.70	7.669E-03	12.582	16.192	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.048 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.059

Z/L AT 10 METERS
-0.054

MONIN-OBUKHOV LENGTH (Meters)
-1.837E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.28E-02

HUMIDITY FLUX (Kg/sec m2)
3.80E-05

SEN. HEAT FLUX (Watts/m2)
1.18E 01

TOTAL HEAT FLUX (Watts/m2)
8.89E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.745E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.123E-04

SCALING POT. TEMP. (Kelvin)
-3.439E-02

SCALING V. POT. TEMP. (Kelvin)
-2.599E-01

ROUGHNESS LENGTH (Meters)
3.468E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.162E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.535E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.797E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.439E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.385

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.306E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811162030
START TIME: 20:30: 0 PST
END TIME: 20:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.086	5.140	4.065	3.767	5.291	0.125	4.890

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.271	4.234	2.466	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141216	1421 142743

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.23

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.122	7.90	10.38	NO DATA	311.2	1020.5	1.74E 01	15.271	287.358

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.274	7.43	10.41	NO DATA	-0.00

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.302	15.461	15.642	9.492E-03	78.15	7.670E-03	12.585	16.103	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.336	15.618	15.679	9.510E-03	77.57	7.689E-03	12.616	16.263	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162030
PAGE: 2
START TIME: 20:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.052 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.063

Z/L AT 10 METERS
-0.058

Z/L AT Z1
-0.108

Z/L AT Z2
-0.036

MONIN-OBUKHOV LENGTH
(Meters)
-1.716E 02

PSI1 AT Z1= 0.285339
PSI1 AT Z2= 0.118227
PSI2 AT Z1= 0.183482
PSI2 AT Z2= 0.073485

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.92E-02

HUMIDITY FLUX
(Kg/sec m2)
2.01E-06

SEN. HEAT FLUX
(Watts/m2)
3.60E 00

TOTAL HEAT FLUX
(Watts/m2)
-8.88E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.785E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-9.139E-06

SCALING POT. TEMP.
(Kelvin)
-1.620E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.815E-02

ROUGHNESS LENGTH
(Meters)
3.186E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.185E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.69E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.89E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.35E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.75E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.96E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -5.18E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.92E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.61E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162030
PAGE: 3
START TIME: 20:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.207	7.61	10.40	NO DATA		15.271	-1.064	-0.966	0.278	0.376
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.305	15.549	15.647	9.502E-03	77.82	7.680E-03	12.601	16.192	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.055 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.067

Z/L AT 10 METERS
-0.062

MONIN-OBUKHOV LENGTH (Meters)
-1.607E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.08E-02

HUMIDITY FLUX (Kg/sec m2)
3.54E-05

SEN. HEAT FLUX (Watts/m2)
1.09E 01

TOTAL HEAT FLUX (Watts/m2)
8.09E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.562E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.124E-04

SCALING POT. TEMP. (Kelvin)
-3.422E-02

SCALING V. POT. TEMP. (Kelvin)
-2.536E-01

ROUGHNESS LENGTH (Meters)
3.041E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.132E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.563E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.545E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.767E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.344

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.303E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811162100
START TIME: 21: 0: 0 PST
END TIME: 21:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.142	5.184	3.937	3.652	5.301	0.129	4.850

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.236	4.275	2.465	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142002	1421 143479

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.28

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.200	7.65	10.70	NO DATA	309.9	1020.6	1.81E 01	15.236	287.434

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.348	7.21	10.67	NO DATA	0.13

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.381	15.569	15.750	9.696E-03	79.45	7.836E-03	12.859	16.185	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.409	15.715	15.777	9.675E-03	78.56	7.823E-03	12.837	16.341	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162100
PAGE: 2
START TIME: 21: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.049 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.060

Z/L AT 10 METERS
-0.055

Z/L AT Z1
-0.102

Z/L AT Z2
-0.035

MONIN-OBUKHOV LENGTH
(Meters)
-1.803E 02

PSI1 AT Z1= 0.274909
PSI1 AT Z2= 0.113202
PSI2 AT Z1= 0.176475
PSI2 AT Z2= 0.070272

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.46E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.33E-06

SEN. HEAT FLUX
(Watts/m2)
2.86E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.85E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.231

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.677E-01

SCALING SPEC. HUMD.
(Kg/Kg)
6.432E-06

SCALING POT. TEMP.
(Kelvin)
-1.368E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.290E-02

ROUGHNESS LENGTH
(Meters)
1.974E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2.812E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.43E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.33E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.84E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.68E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.09E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 7.35E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.46E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.67E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162100
PAGE: 3
START TIME: 21: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.283	7.38	10.69	NO DATA		15.236	-0.953	-0.855	0.415	0.513
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.381	15.651	15.749	9.685E-03	78.95	7.829E-03	12.847	16.272	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.055 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.067

Z/L AT 10 METERS
-0.062

MONIN-OBUKHOV LENGTH (Meters)
-1.612E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.49E-02

HUMIDITY FLUX (Kg/sec m2)
3.23E-05

SEN. HEAT FLUX (Watts/m2)
9.73E 00

TOTAL HEAT FLUX (Watts/m2)
7.14E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.467E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.064E-04

SCALING POT. TEMP. (Kelvin)
-3.165E-02

SCALING V. POT. TEMP. (Kelvin)
-2.323E-01

ROUGHNESS LENGTH (Meters)
2.833E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.117E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.087E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.232E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.810E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.305

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.300E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/DPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811162130
START TIME: 21:30: 0 PST
END TIME: 21:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.235	5.276	4.628	4.213	5.292	0.139	4.884

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.200	4.244	2.467	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142818	1421 144297

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.24

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.282	8.99	11.25	NO DATA	311.0	1020.5	1.94E 01	15.200	287.516

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.430	8.29	11.23	NO DATA	0.23

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.463	15.703	15.883	1.006E-02	81.98	8.130E-03	13.339	16.271	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.491	15.849	15.910	1.003E-02	81.07	8.117E-03	13.317	16.428	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162130
PAGE: 2
START TIME: 21:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.020 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.025

Z/L AT 10 METERS
-0.023

Z/L AT Z1
-0.043

Z/L AT Z2
-0:015

MONIN-OBUKHOV LENGTH
(Meters)
-4.258E 02

PSI1 AT Z1= 0.137248
PSI1 AT Z2= 0.051688
PSI2 AT Z1= 0.085708
PSI2 AT Z2= 0.031540

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.34E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.77E-06

SEN. HEAT FLUX
(Watts/m2)
3.97E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.98E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.442E-01

SCALING SPEC. HUMD.
(Kg/Kg)
5.901E-06

SCALING POT. TEMP.
(Kelvin)
-1.307E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.237E-02

ROUGHNESS LENGTH
(Meters)
4.521E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
5.965E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.99E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.29E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.85E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.70E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.43E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 8.02E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.62E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.82E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162130
PAGE: 3
START TIME: 21:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.364	8.56	11.24	NO DATA		15.200	-0.836	-0.738	0.584	0.682
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.462	15.784	15.882	1.004E-02	81.47	8.123E-03	13.327	16.358	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.031 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.039

Z/L AT 10 METERS
-0.036

MONIN-OBUKHOV LENGTH (Meters)
-2.782E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.08E-01

HUMIDITY FLUX (Kg/sec m2)
3.31E-05

SEN. HEAT FLUX (Watts/m2)
9.73E 00

TOTAL HEAT FLUX (Watts/m2)
7.20E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.959E-01

SCALING SPEC. HUMID. (Kg/Kg)
-9.091E-05

SCALING POT. TEMP. (Kelvin)
-2.639E-02

SCALING V. POT. TEMP. (Kelvin)
-1.953E-01

ROUGHNESS LENGTH (Meters)
4.007E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.195E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.757E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.310E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.810E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.265

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.297E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811162200
START TIME: 22: 0: 0 PST
END TIME: 22:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.233	5.275	4.781	4.399	5.288	0.140	4.988

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.213	4.150	2.467	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143513	1421 144943

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.15

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.351	9.28	11.23	NO DATA	314.6	1020.4	1.95E 01	15.213	287.583

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.494	8.65	11.22	NO DATA	0.31

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.532	15.771	15.952	1.004E-02	81.51	8.120E-03	13.322	16.345	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.556	15.913	15.975	1.003E-02	80.69	8.114E-03	13.312	16.497	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162200
PAGE: 2
START TIME: 22: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.020 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.025

Z/L AT 10 METERS
-0.023

Z/L AT Z1
-0.043

Z/L AT Z2
-0.015

MONIN-OBUKHOV LENGTH
(Meters)
-4.259E 02

PSI1 AT Z1= 0.137207
PSI1 AT Z2= 0.051672
PSI2 AT Z1= 0.085682
PSI2 AT Z2= 0.031530

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.07E-02

HUMIDITY FLUX
(Kg/sec m2)
-8.34E-07

SEN. HEAT FLUX
(Watts/m2)
2.99E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.86E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.222E-01

SCALING SPEC. HUMD.
(Kg/Kg)
3.051E-06

SCALING POT. TEMP.
(Kelvin)
-1.081E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.060E-02

ROUGHNESS LENGTH
(Meters)
7.894E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
4.936E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.36E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 6.67E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.36E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.32E-03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.58E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.55E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -4.38E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -4.46E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162200
PAGE: 3
START TIME: 22: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.431	8.89	11.22	NO DATA	15.213	-0.782	-0.684	0.637	0.735

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.529	15.850	15.948	1.003E-02	81.05	8.117E-03	13.317	16.429	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.026 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.033

Z/L AT 10 METERS
-0.030

MONIN-OBUKHOV LENGTH (Meters)
-3.298E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.18E-01

HUMIDITY FLUX (Kg/sec m2)
3.46E-05

SEN. HEAT FLUX (Watts/m2)
9.46E 00

TOTAL HEAT FLUX (Watts/m2)
7.54E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.103E-01

SCALING SPEC. HUMID. (Kg/Kg)
-9.075E-05

SCALING POT. TEMP. (Kelvin)
-2.448E-02

SCALING V. POT. TEMP. (Kelvin)
-1.951E-01

ROUGHNESS LENGTH (Meters)
4.394E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.217E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.628E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.464E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.597E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.279

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.298E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811162230
START TIME: 22:30: 0 PST
END TIME: 22:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.260	5.302	5.184	4.688	5.283	0.141	4.926

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.225	4.117	2.463	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142431	1421 143977

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.12

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.243	10.06	11.39	NO DATA	312.5	1020.4	1.96E 01	15.225	287.480

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.398	9.21	11.38	NO DATA	0.36

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.424	15.677	15.858	1.015E-02	82.93	8.205E-03	13.460	16.231	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.459	15.832	15.893	1.014E-02	82.07	8.201E-03	13.455	16.394	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162230
PAGE: 2
START TIME: 22:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.016 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.021

Z/L AT 10 METERS
-0.019

Z/L AT Z1
-0.036

Z/L AT Z2
-0.012

MONIN-OBUKHOV LENGTH
(Meters)
-5.137E 02

PSI1 AT Z1= 0.116649
PSI1 AT Z2= 0.043292
PSI2 AT Z1= 0.072475
PSI2 AT Z2= 0.026349

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.08E-01

HUMIDITY FLUX
(Kg/sec m2)
-5.26E-07

SEN. HEAT FLUX
(Watts/m2)
5.92E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.50E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.960E-01

SCALING SPEC. HUMD.
(Kg/Kg)
1.443E-06

SCALING POT. TEMP.
(Kelvin)
-1.605E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.615E-02

ROUGHNESS LENGTH
(Meters)
1.217E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
8.763E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 8.58E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 3.18E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.53E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.56E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.18E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 3.28E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.95E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.93E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162230
PAGE: 3
START TIME: 22:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.329	9.54	11.38	NO DATA		15.225	-0.896	-0.798	0.538	0.636
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.427	15.763	15.861	1.014E-02	82.45	8.203E-03	13.457	16.321	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.024 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.030

Z/L AT 10 METERS
-0.028

MONIN-OBUKHOV LENGTH (Meters)
-3.612E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.41E-01

HUMIDITY FLUX (Kg/sec m2)
3.59E-05

SEN. HEAT FLUX (Watts/m2)
1.12E 01

TOTAL HEAT FLUX (Watts/m2)
8.01E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.384E-01

SCALING SPEC. HUMID. (Kg/Kg)
-8.617E-05

SCALING POT. TEMP. (Kelvin)
-2.659E-02

SCALING V. POT. TEMP. (Kelvin)
-1.900E-01

ROUGHNESS LENGTH (Meters)
5.210E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.259E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.145E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.588E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.999E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.292

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.299E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811162300
START TIME: 23: 0: 0 PST
END TIME: 23:29:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00 VOLT. REF. A	No. 01 TEMP. STRUC. 1	No. 02 TEMP. STRUC. 2	No. 03 DEW POINT1	No. 04 DEW POINT2	No. 05 WIND SPEED1	No. 06 WIND SPEED2	No. 07 BAR. PRES.	No. 08 SKY RAD.	No. 09 WIND DIR.
6.204	0.000	0.000	5.318	5.353	5.424	4.941	5.276	0.141	4.936

No. 10 BULK WT TEMP	No. 11 AC FREQUENCY	No. 12 AC VOLTAGE	No. 13 MANUAL FLAG	No. 14 ZERO REF.	No. 15 SPARE A	No. 16 SPARE B	No. 17 VOLT. REF. B
5.238	4.128	2.462	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1 AIR TEMP. 1	No. 2 AIR TEMP. 2
1411 143252	1421 144757

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.13

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.325	10.52	11.73	NO DATA	312.8	1020.2	1.97E 01	15.238	287.560

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.476	9.69	11.68	NO DATA	0.36

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.506	15.792	15.973	1.038E-02	84.36	8.392E-03	13.765	16.317	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.537	15.939	16.001	1.034E-02	83.32	8.369E-03	13.728	16.477	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162300
PAGE: 2
START TIME: 23: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.015 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.020

Z/L AT 10 METERS
-0.018

Z/L AT Z1
-0.034

Z/L AT Z2
-0.011

MONIN-OBUKHOV LENGTH
(Meters)
-5.471E 02

PSI1 AT Z1= 0.110355
PSI1 AT Z2= 0.040770
PSI2 AT Z1= 0.068454
PSI2 AT Z2= 0.024795

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.01E-01

HUMIDITY FLUX
(Kg/sec m2)
-3.61E-06

SEN. HEAT FLUX
(Watts/m2)
5.04E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.36E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.863E-01

SCALING SPEC. HUMD.
(Kg/Kg)
1.026E-05

SCALING POT. TEMP.
(Kelvin)
-1.413E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.269E-02

ROUGHNESS LENGTH
(Meters)
4.617E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
8.196E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 8.33E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.26E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.12E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.80E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.22E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4.61E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.35E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.73E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162300
PAGE: 3
START TIME: 23: 0: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.409	10.02	11.70	NO DATA		15.238	-0.829	-0.731	0.636	0.734
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.507	15.874	15.972	1.036E-02	83.78	8.380E-03	13.746	16.406	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.019 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.024

Z/L AT 10 METERS
-0.022

MONIN-OBUKHOV LENGTH (Meters)
-4.475E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.59E-01

HUMIDITY FLUX (Kg/sec m2)
3.50E-05

SEN. HEAT FLUX (Watts/m2)
1.09E 01

TOTAL HEAT FLUX (Watts/m2)
7.75E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.599E-01

SCALING SPEC. HUMID. (Kg/Kg)
-7.904E-05

SCALING POT. TEMP. (Kelvin)
-2.427E-02

SCALING V. POT. TEMP. (Kelvin)
-1.729E-01

ROUGHNESS LENGTH (Meters)
5.882E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.291E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.295E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.498E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.735E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.307

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.300E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811162330
START TIME: 23:30: 0 PST
END TIME: 23:59:50 PST
START DATE: 16 Nov 1978 (DAY 320)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.342	5.375	5.598	5.054	5.269	0.140	4.914

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.250	4.137	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143478	1421 144920

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.348	10.86	11.86	NO DATA	312.1	1020.1	1.95E 01	15.250	287.580

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.492	9.91	11.82	NO DATA	0.34

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.529	15.828	16.009	1.047E-02	85.01	8.469E-03	13.891	16.341	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.553	15.969	16.030	1.043E-02	83.97	8.444E-03	13.850	16.494	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811162330
PAGE: 2
START TIME: 23:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) -0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -1.26E-01	FRICTION VELOCITY (Meters/sec) 3.201E-01	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.75	HUMIDITY FLUX (Kg/sec m2) -4.37E-06	SCALING SPEC. HUMD. (Kg/Kg) 1.111E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.53E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE= 1.09E 00
Z/L AT GMH -0.012	SEN. HEAT FLUX (Watts/m2) 4.43E 00	SCALING POT. TEMP. (Kelvin) -1.113E-02	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 2.49E-06	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= 4.26E 04
Z/L AT 10 METERS -0.011	TOTAL HEAT FLUX (Watts/m2) -2.58E 01			
Z/L AT Z1 -0.021		SCALING V. POT. TEMP. (Kelvin) -9.517E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.49E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE= -4.25E 01
Z/L AT Z2 -0.007	MISCELLANEOUS			
MONIN-OBUKHOV LENGTH (Meters) -8.825E 02	AIR DENSITY (Kg/m3) 1.229	ROUGHNESS LENGTH (Meters) 1.257E-04	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= -2.13E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE= -4.97E 01
PSI1 AT Z1= 0.071730 PSI1 AT Z2= 0.025752 PSI2 AT Z1= 0.044029 PSI2 AT Z2= 0.015586	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.418E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.024E-03		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.892E 05			

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811162330
PAGE: 3
START TIME: 23:30: 0 PST
START DATE: 16 Nov 1978 (DAY 320)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.428	10.28	11.84	NO DATA		15.250	-0.822	-0.724	0.657	0.755
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.526	15.907	16.005	1.045E-02	84.43	8.456E-03	13.869	16.426	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.017 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.022

Z/L AT 10 METERS
-0.021

MONIN-OBUKHOV LENGTH (Meters)
-4.875E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.70E-01

HUMIDITY FLUX (Kg/sec m2)
3.48E-05

SEN. HEAT FLUX (Watts/m2)
1.10E 01

TOTAL HEAT FLUX (Watts/m2)
7.73E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.718E-01

SCALING SPEC. HUMID. (Kg/Kg)
-7.607E-05

SCALING POT. TEMP. (Kelvin)
-2.379E-02

SCALING V. POT. TEMP. (Kelvin)
-1.670E-01

ROUGHNESS LENGTH (Meters)
6.277E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.308E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.382E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.477E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.845E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.320

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.301E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170000
START TIME: 0: 0: 0 PST
END TIME: 0:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.366	5.400	6.074	5.463	5.236	0.136	4.774

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.263	4.133	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143544	1421 145083

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.13

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.354	11.78	12.00	NO DATA	307.3	1019.6	1.90E 01	15.263	287.591

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.508	10.70	11.97	NO DATA	0.30

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.535	15.849	16.030	1.056E-02	85.73	8.549E-03	14.015	16.348	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.570	16.001	16.062	1.054E-02	84.72	8.533E-03	13.989	16.511	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170000
PAGE: 2
START TIME: 0: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.010 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.013

Z/L AT 10 METERS
-0.012

Z/L AT Z1
-0.022

Z/L AT Z2
-0.008

MONIN-OBUKHOV LENGTH
(Meters)
-8.263E 02

PSI1 AT Z1= 0.076187
PSI1 AT Z2= 0.027445
PSI2 AT Z1= 0.046825
PSI2 AT Z2= 0.016620

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.64E-01

HUMIDITY FLUX
(Kg/sec m2)
-3.23E-06

SEN. HEAT FLUX
(Watts/m2)
7.04E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.99E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.657E-01

SCALING SPEC. HUMD.
(Kg/Kg)
7.179E-06

SCALING POT. TEMP.
(Kelvin)
-1.548E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.459E-02

ROUGHNESS LENGTH
(Meters)
2.289E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.337E-03

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.09E-01

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.61E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.46E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.26E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 9.57E-01

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 6.59E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.06E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.24E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170000
PAGE: 3
START TIME: 0: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.440	11.12	11.98	NO DATA		15.263	-0.823	-0.725	0.671	0.769
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.538	15.934	16.032	1.055E-02	85.17	8.541E-03	14.001	16.439	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.013 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.017

Z/L AT 10 METERS
-0.016

MONIN-OBUKHOV LENGTH (Meters)
-6.166E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.07E-01

HUMIDITY FLUX (Kg/sec m2)
3.63E-05

SEN. HEAT FLUX (Watts/m2)
1.17E 01

TOTAL HEAT FLUX (Watts/m2)
8.23E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.105E-01

SCALING SPEC. HUMID. (Kg/Kg)
-7.198E-05

SCALING POT. TEMP. (Kelvin)
-2.293E-02

SCALING V. POT. TEMP. (Kelvin)
-1.611E-01

ROUGHNESS LENGTH (Meters)
7.654E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.364E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.685E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.631E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.413E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.335

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.302E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170030
START TIME: 0:30: 0 PST
END TIME: 0:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.388	5.419	5.372	4.875	5.231	0.129	4.859

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.275	4.141	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 144813	1421 146152

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.481	10.42	12.12	NO DATA	310.2	1019.5	1.81E 01	15.275	287.708

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.615	9.57	12.08	NO DATA	0.23

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.662	15.989	16.170	1.065E-02	85.74	8.621E-03	14.132	16.483	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.677	16.119	16.181	1.061E-02	84.75	8.596E-03	14.090	16.626	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170030
PAGE: 2
START TIME: 0:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.007 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.009

Z/L AT 10 METERS
-0.008

Z/L AT Z1
-0.015

Z/L AT Z2
-0.005

MONIN-OBUKHOV LENGTH
(Meters)
-1.226E 03

PSI1 AT Z1= 0.052844
PSI1 AT Z2= 0.018699
PSI2 AT Z1= 0.032257
PSI2 AT Z2= 0.011291

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.01E-01

HUMIDITY FLUX
(Kg/sec m2)
-3.95E-06

SEN. HEAT FLUX
(Watts/m2)
2.29E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.55E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.419E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.891E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.861E-01

SCALING SPEC. HUMD.
(Kg/Kg)
1.125E-05

SCALING POT. TEMP.
(Kelvin)
-6.449E-03

SCALING V. POT. TEMP.
(Kelvin)
-4.794E-03

ROUGHNESS LENGTH
(Meters)
5.261E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
8.184E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 8.61E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.54E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.45E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.08E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.22E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 4.20E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -7.33E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.86E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170030
PAGE: 3
START TIME: 0:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.556	9.90	12.10	NO DATA	15.275	-0.719	-0.621	0.787	0.885

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.654	16.062	16.160	1.063E-02	85.19	8.607E-03	14.110	16.562	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.017 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.022

Z/L AT 10 METERS
-0.020

MONIN-OBUKHOV LENGTH (Meters)
-4.887E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.54E-01

HUMIDITY FLUX (Kg/sec m2)
3.14E-05

SEN. HEAT FLUX (Watts/m2)
9.52E 00

TOTAL HEAT FLUX (Watts/m2)
6.90E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.546E-01

SCALING SPEC. HUMID. (Kg/Kg)
-7.220E-05

SCALING POT. TEMP. (Kelvin)
-2.159E-02

SCALING V. POT. TEMP. (Kelvin)
-1.565E-01

ROUGHNESS LENGTH (Meters)
5.712E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.283E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.257E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.144E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.655E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.419E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.348

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.303E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170100
START TIME: 1: 0: 0 PST
END TIME: 1:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.364	5.399	5.257	4.795	5.227	0.134	4.895

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.288	4.137	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 144948	1421 146327

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.495	10.20	11.98	NO DATA	311.4	1019.5	1.87E 01	15.288	287.724

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.633	9.41	11.96	NO DATA	0.15

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.676	15.988	16.169	1.054E-02	84.83	8.538E-03	13.994	16.497	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.694	16.125	16.186	1.052E-02	83.98	8.528E-03	13.978	16.645	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170100
PAGE: 2
START TIME: 1: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.010 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.013

Z/L AT 10 METERS
-0.012

Z/L AT Z1
-0.022

Z/L AT Z2
-0.008

MONIN-OBUKHOV LENGTH
(Meters)
-8.239E 02

PSI1 AT Z1= 0.076397
PSI1 AT Z2= 0.027525
PSI2 AT Z1= 0.046956
PSI2 AT Z2= 0.016669

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-8.77E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.42E-06

SEN. HEAT FLUX
(Watts/m2)
2.76E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.94E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.891E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.672E-01

SCALING SPEC. HUMD.
(Kg/Kg)
4.322E-06

SCALING POT. TEMP.
(Kelvin)
-8.297E-03

SCALING V. POT. TEMP.
(Kelvin)
-7.863E-03

ROUGHNESS LENGTH
(Meters)
2.843E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
7.142E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.93E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 9.66E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.86E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.76E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.31E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 1.09E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -5.70E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -6.01E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170100
PAGE: 3
START TIME: 1: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.572	9.72	11.97	NO DATA		15.288	-0.716	-0.618	0.776	0.874
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.670	16.064	16.162	1.053E-02	84.36	8.532E-03	13.986	16.579	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.018 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.023

Z/L AT 10 METERS
-0.022

MONIN-OBUKHOV LENGTH (Meters)
-4.638E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.47E-01

HUMIDITY FLUX (Kg/sec m2)
3.22E-05

SEN. HEAT FLUX (Watts/m2)
9.36E 00

TOTAL HEAT FLUX (Watts/m2)
7.01E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.465E-01

SCALING SPEC. HUMID. (Kg/Kg)
-7.568E-05

SCALING POT. TEMP. (Kelvin)
-2.173E-02

SCALING V. POT. TEMP. (Kelvin)
-1.627E-01

ROUGHNESS LENGTH (Meters)
5.457E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.271E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.201E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.220E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.528E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.362

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.304E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170130
START TIME: 1:30: 0 PST
END TIME: 1:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.336	5.369	4.790	4.365	5.225	0.134	4.853

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.300	4.144	2.462	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142611	1421 144111

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.261	9.30	11.80	NO DATA	310.0	1019.5	1.86E 01	15.300	288.496

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.411	8.58	11.78	NO DATA	0.06

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.442	15.736	15.917	1.043E-02	85.15	8.442E-03	13.837	16.250	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.472	15.885	15.946	1.041E-02	84.21	8.430E-03	13.817	16.408	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170130
PAGE: 2
START TIME: 1:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.020 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.026

Z/L AT 10 METERS
-0.024

Z/L AT Z1
-0.044

Z/L AT Z2
-0.015

MONIN-OBUKHOV LENGTH
(Meters)
-4.195E 02

PSI1 AT Z1= 0.139020
PSI1 AT Z2= 0.052421
PSI2 AT Z1= 0.086852
PSI2 AT Z2= 0.031994

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.77E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.73E-06

SEN. HEAT FLUX
(Watts/m2)
4.39E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.85E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.514E-01

SCALING SPEC. HUMD.
(Kg/Kg)
5.585E-06

SCALING POT. TEMP.
(Kelvin)
-1.404E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.342E-02

ROUGHNESS LENGTH
(Meters)
4.212E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
6.319E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.19E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.22E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.07E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.93E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.39E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 8.47E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.37E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.53E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170130
PAGE: 3
START TIME: 1:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.345	8.86	11.79	NO DATA		15.300	-0.955	-0.857	0.519	0.617
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID (Percent)**	**SPEC. HUMID (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.443	15.819	15.917	1.042E-02	84.63	8.435E-03	13.826	16.338	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.031 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.039

Z/L AT 10 METERS
-0.036

MONIN-OBUKHOV LENGTH (Meters)
-2.749E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.17E-01

HUMIDITY FLUX (Kg/sec m2)
3.08E-05

SEN. HEAT FLUX (Watts/m2)
1.12E 01

TOTAL HEAT FLUX (Watts/m2)
6.85E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.089E-01

SCALING SPEC. HUMID. (Kg/Kg)
-8.111E-05

SCALING POT. TEMP. (Kelvin)
-2.910E-02

SCALING V. POT. TEMP. (Kelvin)
-1.783E-01

ROUGHNESS LENGTH (Meters)
4.355E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.215E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.539E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.079E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.989E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.229

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.376

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.305E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170200
START TIME: 2: 0: 0 PST
END TIME: 2:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.365	5.396	4.237	3.876	5.215	0.134	5.043

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.313	4.136	2.462	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 145163	1421 146524

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.516	8.23	11.96	NO DATA	316.5	1019.3	1.87E 01	15.313	287.744

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.652	7.64	11.94	NO DATA	-0.02

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.697	16.009	16.190	1.053E-02	84.65	8.533E-03	13.984	16.520	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.714	16.144	16.205	1.051E-02	83.80	8.522E-03	13.966	16.666	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170200
PAGE: 2
START TIME: 2: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.016 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.021

Z/L AT 10 METERS
-0.019

Z/L AT Z1
-0.036

Z/L AT Z2
-0.012

MONIN-OBUKHOV LENGTH
(Meters)
-5.161E 02

PSI1 AT Z1= 0.116157
PSI1 AT Z2= 0.043094
PSI2 AT Z1= 0.072161
PSI2 AT Z2= 0.026227

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.10E-02

HUMIDITY FLUX
(Kg/sec m2)
-1.28E-06

SEN. HEAT FLUX
(Watts/m2)
1.92E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.99E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.891E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.038E-01

SCALING SPEC. HUMD.
(Kg/Kg)
5.100E-06

SCALING POT. TEMP.
(Kelvin)
-7.580E-03

SCALING V. POT. TEMP.
(Kelvin)
-7.010E-03

ROUGHNESS LENGTH
(Meters)
1.297E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
4.154E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.91E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.12E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.67E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.54E-03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.72E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 9.27E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -6.24E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -6.75E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170200
PAGE: 3
START TIME: 2: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.592	7.87	11.95	NO DATA		15.313	-0.721	-0.623	0.771	0.869
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.690	16.084	16.182	1.052E-02	84.18	8.527E-03	13.975	16.601	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.035 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.044

Z/L AT 10 METERS
-0.041

MONIN-OBUKHOV LENGTH (Meters)
-2.449E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.74E-02

HUMIDITY FLUX (Kg/sec m2)
2.64E-05

SEN. HEAT FLUX (Watts/m2)
8.09E 00

TOTAL HEAT FLUX (Watts/m2)
5.45E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.668E-01

SCALING SPEC. HUMID. (Kg/Kg)
-8.054E-05

SCALING POT. TEMP. (Kelvin)
-2.440E-02

SCALING V. POT. TEMP. (Kelvin)
-1.643E-01

ROUGHNESS LENGTH (Meters)
3.285E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.149E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.119E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.638E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.510E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.390

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.306E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170230
START TIME: 2:30: 0 PST
END TIME: 2:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.403	5.427	4.015	3.709	5.201	0.127	5.020

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.325	4.132	2.462	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 144960	1421 146312

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.13

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.496	7.80	12.18	NO DATA	315.7	1019.1	1.78E 01	15.325	287.724

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.631	7.32	12.13	NO DATA	-0.09

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.677	16.010	16.191	1.069E-02	86.00	8.659E-03	14.188	16.498	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.692	16.141	16.202	1.064E-02	84.93	8.627E-03	14.135	16.643	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170230
PAGE: 2
START TIME: 2:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.023 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.029

Z/L AT 10 METERS
-0.027

Z/L AT Z1
-0.050

Z/L AT Z2
-0.017

MONIN-OBUKHOV LENGTH
(Meters)
-3.720E 02

PSI1 AT Z1= 0.153937
PSI1 AT Z2= 0.058651
PSI2 AT Z1= 0.096508
PSI2 AT Z2= 0.035863

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.58E-02

HUMIDITY FLUX
(Kg/sec m2)
-3.19E-06

SEN. HEAT FLUX
(Watts/m2)
1.54E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.41E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.419E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.891E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.709E-01

SCALING SPEC. HUMD.
(Kg/Kg)
1.521E-05

SCALING POT. TEMP.
(Kelvin)
-7.274E-03

SCALING V. POT. TEMP.
(Kelvin)
-4.942E-03

ROUGHNESS LENGTH
(Meters)
2.017E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
2.919E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.84E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 3.30E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.58E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -1.07E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.05E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= 3.11E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -6.50E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -9.57E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170230
PAGE: 3
START TIME: 2:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.571	7.51	12.15	NO DATA		15.325	-0.754	-0.656	0.758	0.856
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.669	16.083	16.181	1.066E-02	85.41	8.642E-03	14.160	16.579	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.043 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.052

Z/L AT 10 METERS
-0.049

MONIN-OBUKHOV LENGTH (Meters)
-2.053E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.79E-02

HUMIDITY FLUX (Kg/sec m2)
2.39E-05

SEN. HEAT FLUX (Watts/m2)
8.11E 00

TOTAL HEAT FLUX (Watts/m2)
4.92E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.518E-01

SCALING SPEC. HUMID. (Kg/Kg)
-7.721E-05

SCALING POT. TEMP. (Kelvin)
-2.592E-02

SCALING V. POT. TEMP. (Kelvin)
-1.572E-01

ROUGHNESS LENGTH (Meters)
2.945E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.125E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
6.342E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.387E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.528E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.419E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.404

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.307E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170300
START TIME: 3: 0: 0 PST
END TIME: 3:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.367	5.402	4.437	4.059	5.182	0.125	4.917

No..10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.338	4.141	2.462	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 144343	1421 145731

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.434	8.62	11.97	NO DATA	312.2	1018.8	1.75E 01	15.338	287.664

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.573	8.00	11.98	NO DATA	-0.13

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.615	15.928	16.108	1.054E-02	85.12	8.540E-03	13.988	16.433	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.634	16.068	16.130	1.054E-02	84.43	8.547E-03	14.000	16.581	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170300
PAGE: 2
START TIME: 3: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.017 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.022

Z/L AT 10 METERS
-0.020

Z/L AT Z1
-0.037

Z/L AT Z2
-0.013

MONIN-OBUKHOV LENGTH
(Meters)
-4.958E 02

PSI1 AT Z1= 0.120311
PSI1 AT Z2= 0.044769
PSI2 AT Z1= 0.074820
PSI2 AT Z2= 0.027260

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.73E-02

HUMIDITY FLUX
(Kg/sec m2)
8.65E-07

SEN. HEAT FLUX
(Watts/m2)
2.38E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.30E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.891E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.160E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.263E-06

SCALING POT. TEMP.
(Kelvin)
-8.846E-03

SCALING V. POT. TEMP.
(Kelvin)
-9.747E-03

ROUGHNESS LENGTH
(Meters)
1.538E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
4.667E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.25E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -7.17E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.95E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.14E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.62E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.45E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -5.35E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -4.85E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170300
PAGE: 3
START TIME: 3: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.512	8.24	11.98	NO DATA		15.338	-0.826	-0.728	0.668	0.766
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.610	16.006	16.104	1.054E-02	84.74	8.543E-03	13.994	16.515	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.035 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.043

Z/L AT 10 METERS
-0.040

MONIN-OBUKHOV LENGTH (Meters)
-2.507E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.77E-02

HUMIDITY FLUX (Kg/sec m2)
2.76E-05

SEN. HEAT FLUX (Watts/m2)
9.34E 00

TOTAL HEAT FLUX (Watts/m2)
6.00E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.821E-01

SCALING SPEC. HUMID. (Kg/Kg)
-7.978E-05

SCALING POT. TEMP. (Kelvin)
-2.665E-02

SCALING V. POT. TEMP. (Kelvin)
-1.711E-01

ROUGHNESS LENGTH (Meters)
3.655E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.174E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
7.961E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.763E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.519E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.418

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.308E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170330
START TIME: 3:30: 0 PST
END TIME: 3:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR
6.204	0.000	0.000	5.339	5.375	4.454	4.071	5.171	0.128	4.909

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.350	4.136	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143653	1421 145064

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.365	8.65	11.80	NO DATA	311.9	1018.6	1.79E 01	15.350	287.596

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.506	8.02	11.81	NO DATA	-0.15

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.546	15.842	16.022	1.042E-02	84.54	8.444E-03	13.830	16.360	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.568	15.985	16.046	1.043E-02	83.87	8.455E-03	13.846	16.510	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170330
PAGE: 2
START TIME: 3:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.018 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.023

Z/L AT 10 METERS
-0.022

Z/L AT Z1
-0.040

Z/L AT Z2
-0.014

MONIN-OBUKHOV LENGTH
(Meters)
-4.614E 02

PSI1 AT Z1= 0.128072
PSI1 AT Z2= 0.047921
PSI2 AT Z1= 0.079800
PSI2 AT Z2= 0.029208

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.00E-02

HUMIDITY FLUX
(Kg/sec m2)
1.25E-06

SEN. HEAT FLUX
(Watts/m2)
2.72E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.21E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.210E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-4.601E-06

SCALING POT. TEMP.
(Kelvin)
-9.916E-03

SCALING V. POT. TEMP.
(Kelvin)
-1.105E-02

ROUGHNESS LENGTH
(Meters)
1.994E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
4.885E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.36E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -1.01E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.17E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.42E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.58E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.03E 05

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -4.77E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -4.28E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170330
PAGE: 3
START TIME: 3:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.444	8.26	11.81	NO DATA		15.350	-0.906	-0.808	0.572	0.670
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.542	15.922	16.020	1.043E-02	84.16	8.450E-03	13.839	16.443	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.037 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.046

Z/L AT 10 METERS
-0.043

MONIN-OBUKHOV LENGTH (Meters)
-2.342E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.85E-02

HUMIDITY FLUX (Kg/sec m2)
2.91E-05

SEN. HEAT FLUX (Watts/m2)
1.01E 01

TOTAL HEAT FLUX (Watts/m2)
6.40E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.833E-01

SCALING SPEC. HUMID. (Kg/Kg)
-8.361E-05

SCALING POT. TEMP. (Kelvin)
-2.874E-02

SCALING V. POT. TEMP. (Kelvin)
-1.817E-01

ROUGHNESS LENGTH (Meters)
3.684E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.175E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.025E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.908E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.142E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.432

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.309E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170400
START TIME: 4: 0: 0 PST
END TIME: 4:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.291	5.335	4.624	4.210	5.151	0.129	4.780

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.363	4.140	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143927	1421 145288

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >. 005V)	VOLT. REF. DEV B(No. >. 005V)	ZERO REF. DEV (No. >. 002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.393	8.98	11.50	NO DATA	307.5	1018.3	1.80E 01	15.363	287.621

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.529	8.29	11.58	NO DATA	-0.14

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.573	15.841	16.022	1.022E-02	82.78	8.286E-03	13.566	16.388	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.590	15.985	16.046	1.027E-02	82.44	8.325E-03	13.630	16.533	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170400
PAGE: 2
START TIME: 4: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.012 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.015

Z/L AT 10 METERS
-0.014

Z/L AT Z1
-0.026

Z/L AT Z2
-0.009

MONIN-OBUKHOV LENGTH
(Meters)
-7.058E 02

PSI1 AT Z1= 0.087926
PSI1 AT Z2= 0.031953
PSI2 AT Z1= 0.054217
PSI2 AT Z2= 0.019378

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.86E-02

HUMIDITY FLUX
(Kg/sec m2)
5.11E-06

SEN. HEAT FLUX
(Watts/m2)
2.22E 00

TOTAL HEAT FLUX
(Watts/m2)
-3.17E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.227

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.891E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.365E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.760E-05

SCALING POT. TEMP.
(Kelvin)
-7.546E-03

SCALING V. POT. TEMP.
(Kelvin)
-1.093E-02

ROUGHNESS LENGTH
(Meters)
3.044E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
5.593E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.97E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -3.92E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.68E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.43E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.48E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.69E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -6.27E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -4.33E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170400
PAGE: 3
START TIME: 4: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.469	8.55	11.54	NO DATA		15.363	-0.894	-0.796	0.558	0.656
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.567	15.921	16.019	1.025E-02	82.58	8.307E-03	13.600	16.469	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.033 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.041

Z/L AT 10 METERS
-0.038

MONIN-OBUKHOV LENGTH (Meters)
-2.622E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.07E-01

HUMIDITY FLUX (Kg/sec m2)
3.23E-05

SEN. HEAT FLUX (Watts/m2)
1.03E 01

TOTAL HEAT FLUX (Watts/m2)
7.18E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.957E-01

SCALING SPEC. HUMID. (Kg/Kg)
-8.891E-05

SCALING POT. TEMP. (Kelvin)
-2.796E-02

SCALING V. POT. TEMP. (Kelvin)
-1.956E-01

ROUGHNESS LENGTH (Meters)
4.000E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.195E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.741E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.226E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.268E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.891E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.446

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.310E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170430
START TIME: 4:30: 0 PST
END TIME: 4:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.286	5.324	4.703	4.345	5.139	0.130	4.763

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.375	4.127	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142590	1421 144030

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.13

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.259	9.13	11.47	NO DATA	306.9	1018.1	1.81E 01	15.375	287.491

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.403	8.54	11.51	NO DATA	-0.10

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.440	15.703	15.884	1.020E-02	83.28	8.266E-03	13.531	16.247	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.464	15.852	15.914	1.022E-02	82.74	8.289E-03	13.570	16.399	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170430
PAGE: 2
START TIME: 4:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.024 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.030

Z/L AT 10 METERS
-0.028

Z/L AT Z1
-0.052

Z/L AT Z2
-0.018

MONIN-OBUKHOV LENGTH
(Meters)
-3.533E 02

PSI1 AT Z1= 0.160773
PSI1 AT Z2= 0.061543
PSI2 AT Z1= 0.100950
PSI2 AT Z2= 0.037664

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.35E-02

HUMIDITY FLUX
(Kg/sec m2)
2.82E-06

SEN. HEAT FLUX
(Watts/m2)
2.96E 00

TOTAL HEAT FLUX
(Watts/m2)
-8.20E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.088E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-1.101E-05

SCALING POT. TEMP.
(Kelvin)
-1.139E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.366E-02

ROUGHNESS LENGTH
(Meters)
3.958E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
4.360E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.89E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -2.38E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.47E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -2.96E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.68E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -4.30E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -4.15E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -3.46E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170430
PAGE: 3
START TIME: 4:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.339	8.77	11.49	NO DATA		15.375	-1.036	-0.938	0.411	0.509
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.437	15.786	15.884	1.021E-02	82.97	8.278E-03	13.551	16.332	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.035 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.043

Z/L AT 10 METERS
-0.040

MONIN-OBUKHOV LENGTH (Meters)
-2.487E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.14E-01

HUMIDITY FLUX (Kg/sec m2)
3.36E-05

SEN. HEAT FLUX (Watts/m2)
1.19E 01

TOTAL HEAT FLUX (Watts/m2)
7.66E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.050E-01

SCALING SPEC. HUMID. (Kg/Kg)
-8.964E-05

SCALING POT. TEMP. (Kelvin)
-3.137E-02

SCALING V. POT. TEMP. (Kelvin)
-2.020E-01

ROUGHNESS LENGTH (Meters)
4.250E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.209E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
9.303E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.356E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.568E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.460

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.311E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811170500
START TIME: 5: 0: 0 PST
END TIME: 5:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.259	5.300	4.595	4.202	5.143	0.132	4.964

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.388	4.207	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411.143269	1421.144671

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.327	8.92	11.30	NO DATA	313.8	1018.2	1.84E 01	15.388	287.557

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.467	8.27	11.37	NO DATA	-0.03

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.508	15.756	15.937	1.009E-02	82.02	8.176E-03	13.384	16.319	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.528	15.903	15.964	1.013E-02	81.63	8.211E-03	13.442	16.468	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170500
PAGE: 2
START TIME: 5: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/DSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) -0.016 AT GMH	MOMENTUM FLUX (Nt/m2) -6.28E-02	FRICTION VELOCITY (Meters/sec) 2.262E-01	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.75	HUMIDITY FLUX (Kg/sec m2) 4.51E-06	SCALING SPEC. HUMD. (Kg/Kg) -1.623E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.55E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE= 1.55E 00
Z/L AT GMH -0.021	SEN. HEAT FLUX (Watts/m2) 2.66E 00	SCALING POT. TEMP. (Kelvin) -9.479E-03	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -3.57E-06	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= -2.91E 04
Z/L AT 10 METERS -0.020	TOTAL HEAT FLUX (Watts/m2) -4.65E 00			
Z/L AT Z1 -0.036		SCALING V. POT. TEMP. (Kelvin) -1.264E-02	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.09E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE= -4.99E 01
Z/L AT Z2 -0.012	MISCELLANEOUS	ROUGHNESS LENGTH (Meters) 1.801E-05	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= -2.78E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE= -3.74E 01
MONIN-OBUKHOV LENGTH (Meters) -5.077E 02	AIR DENSITY (Kg/m3) 1.227			
PSI1 AT Z1= 0.117850 PSI1 AT Z2= 0.043776 PSI2 AT Z1= 0.073244 PSI2 AT Z2= 0.026647	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.418E 02	DRAG COEF. AT 10 METERS (Dimensionless) 5.118E-04		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.892E 05			

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170500
PAGE: 3
START TIME: 5: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.405	8.52	11.34	NO DATA		15.388	-0.983	-0.885	0.450	0.548
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.503	15.838	15.936	1.011E-02	81.79	8.195E-03	13.415	16.402	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.036 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.045

Z/L AT 10 METERS
-0.042

MONIN-OBUKHOV LENGTH (Meters)
-2.392E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.06E-01

HUMIDITY FLUX (Kg/sec m2)
3.39E-05

SEN. HEAT FLUX (Watts/m2)
1.11E 01

TOTAL HEAT FLUX (Watts/m2)
7.63E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.943E-01

SCALING SPEC. HUMID. (Kg/Kg)
-9.386E-05

SCALING POT. TEMP. (Kelvin)
-3.037E-02

SCALING V. POT. TEMP. (Kelvin)
-2.087E-01

ROUGHNESS LENGTH (Meters)
3.966E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.193E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.663E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.391E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
8.939E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.474

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.312E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170530
START TIME: 5:30: 0 PST
END TIME: 5:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00 VOLT. REF. A	No. 01 TEMP. STRUC. 1	No. 02 TEMP. STRUC. 2	No. 03 DEW POINT1	No. 04 DEW POINT2	No. 05 WIND SPEED1	No. 06 WIND SPEED2	No. 07 BAR. PRES.	No. 08 SKY RAD.	No. 09 WIND DIR.
6.204	0.000	0.000	5.244	5.288	4.994	4.548	5.141	0.133	5.022

No. 10 BULK WT TEMP	No. 11 AC FREQUENCY	No. 12 AC VOLTAGE	No. 13 MANUAL FLAG	No. 14 ZERO REF.	No. 15 SPARE A	No. 16 SPARE B	No. 17 VOLT. REF. B
5.400	4.191	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1 AIR TEMP. 1	No. 2 AIR TEMP. 2
1411 142354	1421 143864

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.19

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.235	9.69	11.21	NO DATA	315.8	1018.2	1.85E 01	15.400	287.471

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.386	8.94	11.30	NO DATA	0.07

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.416	15.655	15.836	1.003E-02	82.00	8.126E-03	13.302	16.222	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.448	15.815	15.877	1.008E-02	81.68	8.173E-03	13.380	16.382	NO DATA

* CONTINUED ON PAGE 2

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E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.019 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.024

Z/L AT 10 METERS
-0.022

Z/L AT Z1
-0.041

Z/L AT Z2
-0.014

MONIN-OBUKHOV LENGTH
(Meters)
-4.507E 02

PSI1 AT Z1= 0.130700
PSI1 AT Z2= 0.048996
PSI2 AT Z1= 0.081490
PSI2 AT Z2= 0.029873

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-8.59E-02

HUMIDITY FLUX
(Kg/sec m2)
7.12E-06

SEN. HEAT FLUX
(Watts/m2)
4.77E 00

TOTAL HEAT FLUX
(Watts/m2)
3.84E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.645E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.191E-05

SCALING POT. TEMP.
(Kelvin)
-1.452E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.869E-02

ROUGHNESS LENGTH
(Meters)
4.773E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
6.998E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.60E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.80E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.18E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.09E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.32E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.16E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.26E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.53E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170530
PAGE: 3
START TIME: 5:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.320	9.23	11.26	NO DATA		15.400	-1.080	-0.982	0.344	0.442
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.418	15.744	15.842	1.006E-02	81.81	8.151E-03	13.343	16.311	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.031 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.039

Z/L AT 10 METERS
-0.036

MONIN-OBUKHOV LENGTH (Meters)
-2.781E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.30E-01

HUMIDITY FLUX (Kg/sec m2)
3.75E-05

SEN. HEAT FLUX (Watts/m2)
1.29E 01

TOTAL HEAT FLUX (Watts/m2)
8.68E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.249E-01

SCALING SPEC. HUMID. (Kg/Kg)
-9.390E-05

SCALING POT. TEMP. (Kelvin)
-3.183E-02

SCALING V. POT. TEMP. (Kelvin)
-2.149E-01

ROUGHNESS LENGTH (Meters)
4.809E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.239E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.056E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.746E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.034E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.488

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.313E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811170600
START TIME: 6: 0: 0 PST
END TIME: 6:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.239	5.282	5.028	4.641	5.144	0.139	4.851

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.413	4.205	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141911	1421 143376

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.191	9.76	11.17	NO DATA	309.9	1018.2	1.94E 01	15.413	287.424

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.338	9.11	11.26	NO DATA	0.19

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.372	15.607	15.788	1.001E-02	82.03	8.105E-03	13.269	16.176	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.399	15.763	15.824	1.006E-02	81.73	8.152E-03	13.346	16.330	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170600
PAGE: 2
START TIME: 6: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.022 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.028

Z/L AT 10 METERS
-0.026

Z/L AT Z1
-0.048

Z/L AT Z2
-0.016

MONIN-OBUKHOV LENGTH
(Meters)
-3.841E 02

PSI1 AT Z1= 0.149848
PSI1 AT Z2= 0.056932
PSI2 AT Z1= 0.093856
PSI2 AT Z2= 0.034795

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-6.37E-02

HUMIDITY FLUX
(Kg/sec m2)
6.10E-06

SEN. HEAT FLUX
(Watts/m2)
3.54E 00

TOTAL HEAT FLUX
(Watts/m2)
-8.60E-01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.228

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.277E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-2.180E-05

SCALING POT. TEMP.
(Kelvin)
-1.252E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.666E-02

ROUGHNESS LENGTH
(Meters)
5.398E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
5.185E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.47E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -4.74E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.72E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.62E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.54E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -2.17E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.78E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.84E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170600
PAGE: 3 E-O MET/OSP PRINT DATE: 5 APR 1979
START TIME: 6: 0: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 17 Nov 1978 (DAY 321) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.273	9.36	11.22	NO DATA	15.413	-1.140	-1.042	0.281	0.379

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.371	15.694	15.792	1.003E-02	81.85	8.130E-03	13.310	16.262	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.031 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.039

Z/L AT 10 METERS
-0.036

MONIN-OBUKHOV LENGTH (Meters)
-2.765E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.34E-01

HUMIDITY FLUX (Kg/sec m2)
3.84E-05

SEN. HEAT FLUX (Watts/m2)
1.36E 01

TOTAL HEAT FLUX (Watts/m2)
8.90E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.308E-01

SCALING SPEC. HUMID. (Kg/Kg)
-9.457E-05

SCALING POT. TEMP. (Kelvin)
-3.319E-02

SCALING V. POT. TEMP. (Kelvin)
-2.164E-01

ROUGHNESS LENGTH (Meters)
4.981E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.248E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.094E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.842E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.098E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.228

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.418E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.502

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.314E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7911170630
START TIME: 6:30: 0 PST
END TIME: 6:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.162	5.215	5.271	4.819	5.154	0.215	4.893

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.425	4.201	2.460	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141236	1421 142788

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.20

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.124	10.23	10.71	NO DATA	311.4	1018.4	3.00E 01	15.425	287.361

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.279	9.46	10.86	NO DATA	0.32

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.304	15.496	15.677	9.703E-03	79.88	7.857E-03	12.864	16.105	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.340	15.666	15.728	9.799E-03	79.90	7.939E-03	12.999	16.268	NO DATA

* CONTINUED ON PAGE 2

[illegible] 7811170630
[illegible] 2
START TIME 6 30 0 PST
START DATE 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.020 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.026

Z/L AT 10 METERS
-0.024

Z/L AT Z1
-0.045

Z/L AT Z2
-0.015

MONIN-OBUKHOV LENGTH
(Meters)
-4.135E 02

PSI1 AT Z1= 0.140739
PSI1 AT Z2= 0.053133
PSI2 AT Z1= 0.087962
PSI2 AT Z2= 0.032436

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-9.00E-02

HUMIDITY FLUX
(Kg/sec m2)
1.26E-05

SEN. HEAT FLUX
(Watts/m2)
5.55E 00

TOTAL HEAT FLUX
(Watts/m2)
6.56E 00

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.706E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.783E-05

SCALING POT. TEMP.
(Kelvin)
-1.648E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.344E-02

ROUGHNESS LENGTH
(Meters)
3.183E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
7.324E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.73E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.25E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.60E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.11E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N' SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.29E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.25E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.87E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.02E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170630
PAGE: 3
START TIME: 6:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.210	9.76	10.79	NO DATA		15.425	-1.215	-1.117	0.165	0.263
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel xM-2/3)**
10.00	14.308	15.590	15.688	9.754E-03	79.87	7.900E-03	12.935	16.196	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.029 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.037

Z/L AT 10 METERS
-0.034

MONIN-OBUKHOV LENGTH
(Meters)
-2.944E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.49E-01

HUMIDITY FLUX
(Kg/sec m2)
4.38E-05

SEN. HEAT FLUX
(Watts/m2)
1.50E 01

TOTAL HEAT FLUX
(Watts/m2)
9.29E 01

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.483E-01

SCALING SPEC. HUMID.
(Kg/Kg)
-1.023E-04

SCALING POT. TEMP.
(Kelvin)
-3.453E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.146E-01

ROUGHNESS LENGTH
(Meters)
5.512E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.274E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
1.213E-01

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
4.377E-05

WITH POT. TEMPERATURE
(Meter Kel./sec)
1.203E-02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.229

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL
(Millibar)
17.516

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.315E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

**** MICROMETEOROLOGICAL DATA ****

RUN NUMBER: 7811170700
START TIME: 7: 0: 0 PST
END TIME: 7:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.104	5.160	4.939	4.531	5.165	0.498	4.870

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.438	4.171	2.461	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 139882	1421 141502

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.17

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.988	9.59	10.36	NO DATA	310.6	1018.5	6.95E 01	15.438	287.229

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.150	8.90	10.53	NO DATA	0.45

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.169	15.328	15.509	9.484E-03	78.73	7.675E-03	12.569	15.964	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.212	15.507	15.568	9.591E-03	78.82	7.765E-03	12.716	16.133	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170700
PAGE: 2
START TIME: 7: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.031 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.039

Z/L AT 10 METERS
-0.036

Z/L AT Z1
-0.066

Z/L AT Z2
-0.022

MONIN-OBUKHOV LENGTH
(Meters)
-2.790E 02

PSI1 AT Z1= 0.195319
PSI1 AT Z2= 0.076517
PSI2 AT Z1= 0.123556
PSI2 AT Z2= 0.047031

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.57E-02

HUMIDITY FLUX
(Kg/sec m2)
1.30E-05

SEN. HEAT FLUX
(Watts/m2)
6.19E 00

TOTAL HEAT FLUX
(Watts/m2)
-3.13E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.894E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.482E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-4.250E-05

SCALING POT. TEMP.
(Kelvin)
-2.006E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.784E-02

ROUGHNESS LENGTH
(Meters)
2.336E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
6.158E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.87E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -9.08E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.29E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -5.95E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.41E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.11E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -2.36E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -1.70E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170700
PAGE: 3
START TIME: 7: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.079	9.17	10.45	NO DATA		15.438	-1.359	-1.261	-0.011	0.087
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.177	15.427	15.525	9.540E-03	78.76	7.723E-03	12.647	16.058	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.039 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.048

Z/L AT 10 METERS
-0.045

MONIN-OBUKHOV LENGTH
(Meters)
-2.217E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.28E-01

HUMIDITY FLUX
(Kg/sec m2)
4.38E-05

SEN. HEAT FLUX
(Watts/m2)
1.57E 01

TOTAL HEAT FLUX
(Watts/m2)
5.44E 01

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.222E-01

SCALING SPEC. HUMID.
(Kg/Kg)
-1.106E-04

SCALING POT. TEMP.
(Kelvin)
-3.923E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.357E-01

ROUGHNESS LENGTH
(Meters)
4.730E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.235E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
1.038E-01

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
4.383E-05

WITH POT. TEMPERATURE
(Meter Kel./sec)
1.264E-02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.894E 05

VAP. PRES. AT WT LEVEL
(Millibar)
17.531

ABS. HUMID. AT WT LEVEL
(Kg/m3)
1.316E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170730
START TIME: 7:30: 0 PST
END TIME: 7:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.083	5.136	4.624	4.269	5.185	0.781	4.947

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.450	4.143	2.460	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140049	1421 141575

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.14

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.005	8.98	10.23	NO DATA	313.2	1018.8	1.09E 02	15.450	287.241

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.158	8.40	10.39	NO DATA	0.57

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.186	15.333	15.514	9.401E-03	77.96	7.606E-03	12.459	15.982	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.219	15.501	15.562	9.498E-03	78.03	7.688E-03	12.594	16.141	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170730
PAGE: 2
START TIME: 7:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.033 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.041

Z/L AT 10 METERS
-0.039

Z/L AT Z1
-0.071

Z/L AT Z2
-0.024

MONIN-OBUKHOV LENGTH
(Meters)
-2.593E 02

PSI1 AT Z1= 0.207143
PSI1 AT Z2= 0.081776
PSI2 AT Z1= 0.131348
PSI2 AT Z2= 0.050339

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.53E-02

HUMIDITY FLUX
(Kg/sec m2)
1.02E-05

SEN. HEAT FLUX
(Watts/m2)
4.14E 00

TOTAL HEAT FLUX
(Watts/m2)
-7.98E 01

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.894E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.121E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.896E-05

SCALING POT. TEMP.
(Kelvin)
-1.567E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.281E-02

ROUGHNESS LENGTH
(Meters)
6.362E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
4.497E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.83E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.29E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.33E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.85E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.65E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.21E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.02E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.07E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170730
PAGE: 3
START TIME: 7:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.090	8.62	10.31	NO DATA		15.450	-1.360	-1.262	-0.024	0.074
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.188	15.426	15.524	9.452E-03	77.97	7.649E-03	12.530	16.070	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.047 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.058

Z/L AT 10 METERS
-0.054

MONIN-OBUKHOV LENGTH (Meters)
-1.857E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.10E-01

HUMIDITY FLUX (Kg/sec m2)
4.23E-05

SEN. HEAT FLUX (Watts/m2)
1.49E 01

TOTAL HEAT FLUX (Watts/m2)
1.04E 01

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.986E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.153E-04

SCALING POT. TEMP. (Kelvin)
-4.023E-02

SCALING V. POT. TEMP. (Kelvin)
-2.809E-02

ROUGHNESS LENGTH (Meters)
4.078E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.199E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
8.917E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.234E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
1.201E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.417E 02

WATER LAT. HEAT VAP. (ITcal/Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.544

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.317E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170800
START TIME: 8: 0: 0 PST
END TIME: 8:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.074	5.123	4.091	3.771	5.203	1.100	4.944

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.463	4.154	2.462	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 140857	1421 142305

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.15

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.086	7.95	10.17	NO DATA	313.1	1019.1	1.53E 02	15.463	287.318

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.230	7.44	10.31	NO DATA	0.68

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.267	15.408	15.589	9.361E-03	77.24	7.574E-03	12.410	16.066	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.292	15.566	15.628	9.445E-03	77.25	7.646E-03	12.527	16.217	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170800
PAGE: 2
START TIME: 8: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE, 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.033 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.041

Z/L AT 10 METERS
-0.038

Z/L AT Z1
-0.070

Z/L AT Z2
-0.024

MONIN-OBUKHOV LENGTH
(Meters)
-2.618E 02

PSI1 AT Z1= 0.205613
PSI1 AT Z2= 0.081092
PSI2 AT Z1= 0.130338
PSI2 AT Z2= 0.049908

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.25E-02

HUMIDITY FLUX
(Kg/sec m2)
7.76E-06

SEN. HEAT FLUX
(Watts/m2)
2.77E 00

TOTAL HEAT FLUX
(Watts/m2)
-1.32E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.860E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.393E-05

SCALING POT. TEMP.
(Kelvin)
-1.195E-02

SCALING V. POT. TEMP.
(Kelvin)
-1.820E-02

ROUGHNESS LENGTH
(Meters)
5.518E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
3.458E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.11E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -7.22E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.54E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -3.87E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 1.88E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.39E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.96E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.60E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170800
PAGE: 3
START TIME: 8: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.166	7.64	10.24	NO DATA		15.463	-1.297	-1.199	0.033	0.131
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.264	15.496	15.594	9.406E-03	77.23	7.612E-03	12.472	16.150	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.066 AT GMH	-8.14E-02	2.572E-01	6.615E-02	1.230
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
10.75	3.81E-05	-1.203E-04	3.807E-05	2.416E 02
Z/L AT GMH	SEN. HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	WITH POT. TEMPERATURE (Meter Kel./sec)	WATER LAT. HEAT VAP. (ITcal./Kg)
-0.079	1.30E 01	-4.052E-02	1.042E-02	5.893E 05
Z/L AT 10 METERS	TOTAL HEAT FLUX (Watts/m2)	SCALING V. POT. TEMP. (Kelvin)		VAP. PRES. AT WT LEVEL (Millibar)
-0.073	-4.65E 01	1.454E-01		17.559
MONIN-OBUKHOV LENGTH (Meters)		ROUGHNESS LENGTH (Meters)		ABS. HUMID. AT WT LEVEL (Kg/m3)
-1.368E 02		3.064E-04		1.318E-02
		DRAG COEF. AT 10 METERS (Dimensionless)		
		1.134E-03		

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170830
START TIME: 8:30: 0 PST
END TIME: 8:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	5.037	5.090	3.772	3.517	5.200	1.783	4.971

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.475	4.159	2.464	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141162	1421 142625

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >. 005V)	B(No. >. 005V)	(No. >. 002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.6	60.16

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1		WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.116	7.33	9.96	NO DATA		314.0	1019.1	2.49E 02	15.475	287.349

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2		TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)		(Meter MSL)
14.263	6.95	10.11	NO DATA		0.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.297	15.421	15.601	9.229E-03	76.01	7.468E-03	12.236	16.098	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.324	15.581	15.642	9.320E-03	76.08	7.545E-03	12.363	16.251	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170830
PAGE: 2
START TIME: 8:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.063 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.075

Z/L AT 10 METERS
-0.070

Z/L AT Z1
-0.129

Z/L AT Z2
-0.044

MONIN-OBUKHOV LENGTH
(Meters)
-1.431E 02

PSI1 AT Z1= 0.326073
PSI1 AT Z2= 0.138318
PSI2 AT Z1= 0.210980
PSI2 AT Z2= 0.086399

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-2.73E-02

HUMIDITY FLUX
(Kg/sec m2)
7.04E-06

SEN. HEAT FLUX
(Watts/m2)
2.46E 00

TOTAL HEAT FLUX
(Watts/m2)
-2.29E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.490E-01

SCALING SPEC. HUMD.
(Kg/Kg)
-3.841E-05

SCALING POT. TEMP.
(Kelvin)
-1.328E-02

SCALING V. POT. TEMP.
(Kelvin)
-2.032E-02

ROUGHNESS LENGTH
(Meters)
5.586E-07

DRAG COEF. AT 10 METERS
(Dimensionless)
2.220E-04

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.83E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -7.82E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.70E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -4.14E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 2.35E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.23E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= -3.56E 01

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.33E 01

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170830
PAGE: 3
START TIME: 8:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.198	7.10	10.04	NO DATA		15.475	-1.277	-1.179	0.035	0.133
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.296	15.510	15.608	9.277E-03	76.03	7.509E-03	12.303	16.183	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.081 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.096

Z/L AT 10 METERS
-0.089

MONIN-OBUKHOV LENGTH (Meters)
-1.125E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.81E-02

HUMIDITY FLUX (Kg/sec m2)
3.67E-05

SEN. HEAT FLUX (Watts/m2)
1.21E 01

TOTAL HEAT FLUX (Watts/m2)
-1.46E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.352E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.268E-04

SCALING POT. TEMP. (Kelvin)
-4.124E-02

SCALING V. POT. TEMP. (Kelvin)
4.989E-01

ROUGHNESS LENGTH (Meters)
2.593E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.098E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
5.534E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.668E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
9.701E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.893E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.572

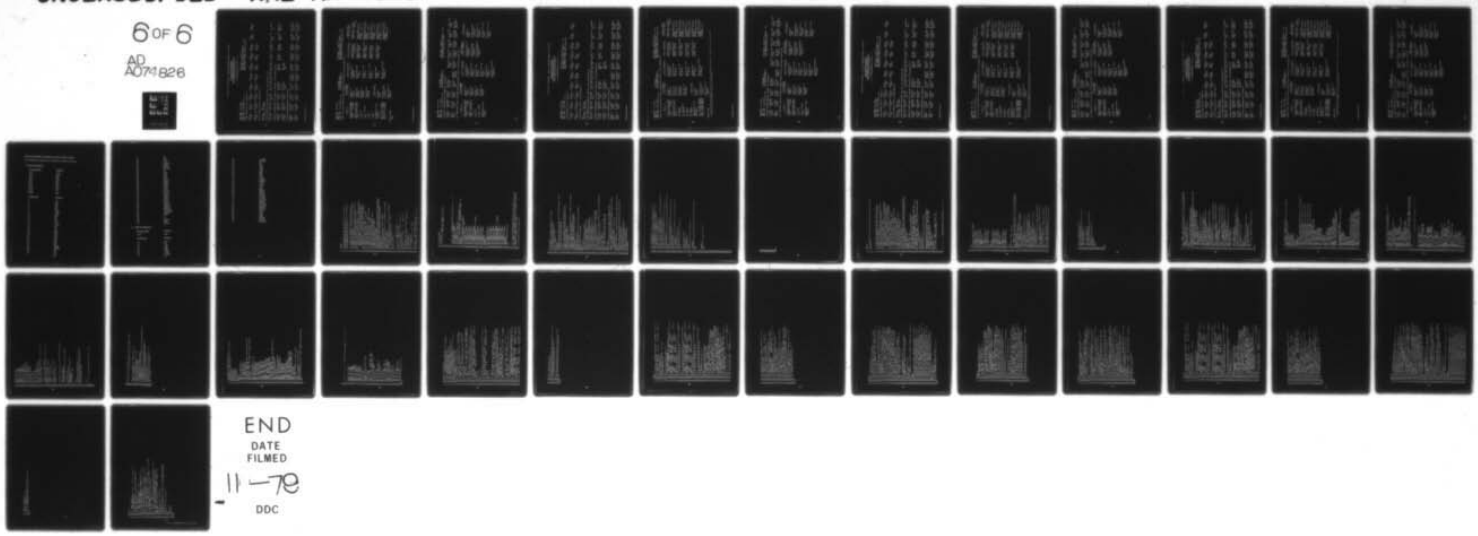
ABS. HUMID. AT WT LEVEL (Kg/m3)
1.319E-02

476

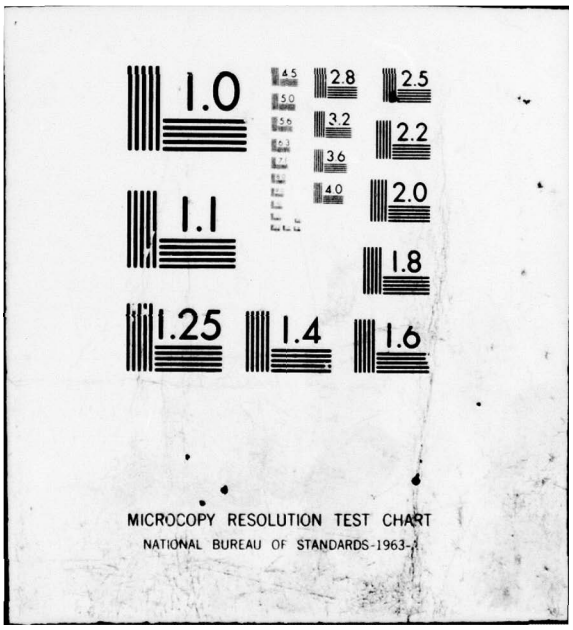
* END

AD-A074 826 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
MICROMETEOROLOGICAL DATA REPORT FOR THE NOVEMBER 1978 ELECTRO-O--ETC(U)
AUG 79 T V BLANC
UNCLASSIFIED NRL-MR-4056 SBIE-AD-E000 325 NL

6 OF 6
AD A074 826



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1.0
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3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170900
START TIME: 9: 0: 0 PST
END TIME: 9:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.916	4.978	3.219	2.999	5.219	3.231	5.121

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.488	4.130	2.466	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142750	1421 143847

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT. REF. DEV	VOLT. REF. DEV	ZERO REF. DEV	AC VOLT. FLUX	AC FREQ. FLUX	AC VOLTAGE	AC FREQUENCY
(No. scans)	(No. scans)	(No. scans)	A(No. >.005V)	B(No. >.005V)	(No. >.002V)	(No. >5V)	(No. >1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	114.7	60.13

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1	WIND SPEED1	DEW POINT1	TEMP. STRUC. 1	WIND DIR.	BAR. PRES.	SKY RAD.	BULK WT TEMP	MEAN AIR TMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Deg. True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.275	6.26	9.25	NO DATA	319.1	1019.4	4.51E 02	15.488	287.490

AIR TEMP. 2	WIND SPEED2	DEW POINT2	TEMP. STRUC. 2	TIDE TABLE
(Celsius)	(Meter/sec)	(Celsius)	(Kel. xM-2/3)	(Meter MSL)
14.385	5.95	9.44	NO DATA	0.84

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT. TEMP. 1	VIR. TEMP. 1	V. POT. TEMP. 1	ABS. HUMID. 1	REL. HUMID. 1	SPEC. HUMID. 1	VAP. PRES. 1	S. VAP. PRES. 1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
18.45	14.456	15.519	15.700	8.796E-03	71.74	7.119E-03	11.667	16.264	NO DATA

HEIGHT, Z2	POT. TEMP. 2	VIR. TEMP. 2	V. POT. TEMP. 2	ABS. HUMID. 2	REL. HUMID. 2	SPEC. HUMID. 2	VAP. PRES. 2	S. VAP. PRES. 2	REF. INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel. xM-2/3)
6.26	14.446	15.645	15.707	8.906E-03	72.15	7.211E-03	11.819	16.380	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170900
PAGE: 2
START TIME: 9: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.034 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
0.054

Z/L AT 10 METERS
0.051

Z/L AT Z1
0.093

Z/L AT Z2
0.032

MONIN-OBUKHOV LENGTH
(Meters)
1.974E 02

PSI1 AT Z1= -0.439324
PSI1 AT Z2= -0.149013
PSI2 AT Z1= -0.593681
PSI2 AT Z2= -0.201369

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.66E-03

HUMIDITY FLUX
(Kg/sec m2)
2.88E-06

SEN. HEAT FLUX
(Watts/m2)
-3.07E-01

TOTAL HEAT FLUX
(Watts/m2)
-4.44E 02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.892E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
7.890E-02

SCALING SPEC. HUMD.
(Kg/Kg)
-2.965E-05

SCALING POT. TEMP.
(Kelvin)
3.129E-03

SCALING V. POT. TEMP.
(Kelvin)
-2.207E-03

ROUGHNESS LENGTH
(Meters)
1.835E-11

DRAG COEF. AT 10 METERS
(Dimensionless)
6.225E-05

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.11E-02

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -9.29E-06

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 9.81E-04

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= -6.92E-04

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE= 4.44E 00

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= -1.60E 04

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE= 1.51E 02

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE= -2.14E 02

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

NONE

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170900
PAGE: 3
START TIME: 9: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.336	6.07	9.35	NO DATA		15.488	-1.152	-1.054	0.101	0.199
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.434	15.589	15.687	8.854E-03	71.95	7.168E-03	11.748	16.329	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.118 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.136

Z/L AT 10 METERS
-0.127

MONIN-OBUKHOV LENGTH (Meters)
-7.881E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.68E-02

HUMIDITY FLUX (Kg/sec m2)
3.49E-05

SEN. HEAT FLUX (Watts/m2)
9.81E 00

TOTAL HEAT FLUX (Watts/m2)
-3.55E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.950E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.453E-04

SCALING POT. TEMP. (Kelvin)
-4.045E-02

SCALING V. POT. TEMP. (Kelvin)
1.463E 00

ROUGHNESS LENGTH (Meters)
1.844E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.031E-03

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
3.802E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.486E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
7.888E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.587

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.320E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811170930
START TIME: 9:30: 0 PST
END TIME: 9:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.841	4.895	2.604	2.426	5.216	3.712	5.423

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.500	4.115	2.468	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 143037	1421 143682

480

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.12

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.304	5.07	8.82	NO DATA	329.4	1019.3	5.18E 02	15.500	287.496

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.368	4.83	8.94	NO DATA	0.88

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.485	15.512	15.693	8.542E-03	69.54	6.914E-03	11.332	16.294	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.430	15.588	15.649	8.615E-03	69.86	6.975E-03	11.431	16.363	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811170930
PAGE: 2
START TIME: 9:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 0.327 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.39E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -6.12E-06	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) *NOT COMPUTED*	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) *DPT/DZ=* 5.53E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED				
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS	ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 4.44E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.230			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415E 02	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3) Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.892E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811170930
PAGE: 3
START TIME: 9:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.340	4.93	8.88	NO DATA		15.500	-1.160	-1.062	0.054	0.152
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.438	15.554	15.652	8.580E-03	69.70	6.947E-03	11.384	16.332	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.221 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.247

Z/L AT 10 METERS
-0.230

MONIN-OBUKHOV LENGTH (Meters)
-4.343E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.85E-02

HUMIDITY FLUX (Kg/sec m2)
3.01E-05

SEN. HEAT FLUX (Watts/m2)
8.48E 00

TOTAL HEAT FLUX (Watts/m2)
-4.35E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.522E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.608E-04

SCALING POT. TEMP. (Kelvin)
-4.476E-02

SCALING V. POT. TEMP. (Kelvin)
2.297E 00

ROUGHNESS LENGTH (Meters)
1.207E-04

DRAG COEF. AT 10 METERS (Dimensionless)
9.551E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
2.318E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.012E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.815E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.600

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.321E-02

* END

ELECTRO-OPTICS METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811171000
START TIME: 10: 0: 0 PST
END TIME: 10:29:50 PST
START DATE: 17 Nov 1978 (DAY 321)

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.885	4.924	2.072	1.974	5.195	4.105	5.953

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.500	4.120	2.465	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 142294	1421 142922

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.7	60.12

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.229	4.02	9.09	NO DATA	347.4	1019.0	5.73E 02	15.500	287.421

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.292	3.96	9.12	NO DATA	0.88

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.410	15.460	15.641	8.704E-03	71.19	7.046E-03	11.544	16.216	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.353	15.526	15.587	8.718E-03	71.03	7.059E-03	11.566	16.282	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811171000
PAGE: 2
START TIME: 10: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR. WITH HEIGHT)
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable) 5.124 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM: DN/DZ= [(N1-N2)Ln(Z1/Z2)]/ [(Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 10.745	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC. HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.14E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert. Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	SEN. HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT. TEMP. (Kelvin) NOT COMPUTED	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -1.37E-06	N=SPEC. HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert. Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	TOTAL HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING V. POT. TEMP. (Kelvin) NOT COMPUTED	N=POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 5.70E-03	N=POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 PTK SLOPE=NOT COMPUTED
Z/L AT Z1 NOT COMUTED		ROUGHNESS LENGH (Meters) NOT COMPUTED	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (Meters) DVPT/DZ= 5.44E-03	N=V. POT. TEMP. (Kelvin) Z=HEIGHT (M) Vert. Axis PSI=PSI2 VPTK SLOPE=NOT COMPUTED
Z/L AT Z2 NOT COMPUTED	MISCELLANEOUS	DRAG COEF. AT 10 METERS (Dimensionless) NOT COMPUTED		N=LnTEMP. STRUC. (KxM-2/3 Z=HEIGHT (M) Vert. Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	AIR DENSITY (Kg/m3) 1.230			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415E 02			
	WATER LAT. HEAT VAP. (ITcal./Kg) 5.892E 05			

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811171000
PAGE: 3
START TIME: 10: 0: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)		BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.264	3.98	9.10	NO DATA		15.500	-1.236	-1.138	-0.003	0.095
HEIGHT (Meters)	**POT. TEMP. (Celsius)**	**VIR. TEMP. (Celsius)**	**V. POT. TEMP. (Celsius)**	**ABS. HUMID. (Kg/m3)**	**REL. HUMID. (Percent)**	**SPEC. HUMID. (Kg/Kg)**	**VAP. PRES. (Millibars)**	**S. VAP. PRES. (Millibars)**	**REF. INDEX (Kel. xM-2/3)**
10.00	14.362	15.497	15.595	8.711E-03	71.10	7.053E-03	11.555	16.253	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY

GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.431 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
10.75

Z/L AT GMH
-0.469

Z/L AT 10 METERS
-0.437

MONIN-OBUKHOV LENGTH (Meters)
-2.290E 01

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.74E-02

HUMIDITY FLUX (Kg/sec m2)
2.37E-05

SEN. HEAT FLUX (Watts/m2)
7.67E 00

TOTAL HEAT FLUX (Watts/m2)
-5.07E 02

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.190E-01

SCALING SPEC. HUMID. (Kg/Kg)
-1.617E-04

SCALING POT. TEMP (Kelvin)
-5.184E-02

SCALING V. POT. TEMP. (Kelvin)
3.423E 00

ROUGHNESS LENGTH (Meters)
8.183E-05

DRAG COEF. AT 10 METERS (Dimensionless)
8.928E-04

MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
1.416E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.366E-05

WITH POT. TEMPERATURE (Meter Kel./sec)
6.168E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.230

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP. (ITcal./Kg)
5.892E 05

VAP. PRES. AT WT LEVEL (Millibar)
17.600

ABS. HUMID. AT WT LEVEL (Kg/m3)
1.321E-02

* END

ELECTRO-OPTICAL METEOROLOGY / OPTICAL SIGNATURES PROGRAM (E-O MET/OPS)

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7811171030
START TIME: 10:30: 0 PST
END TIME: 10:59:50 PST
START DATE: 17 Nov 1978 (DAY 321)

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DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
VOLT. REF. A	TEMP. STRUC. 1	TEMP. STRUC. 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR. PRES.	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.881	4.920	1.846	1.824	5.181	4.339	6.163

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT. REF. B
5.500	4.214	2.463	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL):

No. 1	No. 2
AIR TEMP. 1	AIR TEMP. 2
1411 141476	1421 142487

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No. scans)	ERROR COUNT (No. scans)	DATA BASE (No. scans)	VOLT. REF. DEV A(No. >.005V)	VOLT. REF. DEV B(No. >.005V)	ZERO REF. DEV (No. >.002V)	AC VOLT. FLUX (No. >5V)	AC FREQ. FLUX (No. >1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	114.6	60.21

* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP. 1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP. STRUC. 1 (Kel. xM-2/3)	WIND DIR. (Deg. True)	BAR. PRES. (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TMP (Kelvin)
14.148	3.60	9.08	NO DATA	354.5	1018.8	6.05E 02	15.500	287.358

AIR TEMP. 2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP. STRUC. 2 (Kel. xM-2/3)	TIDE TABLE (Meter MSL)
14.249	3.68	9.10	NO DATA	0.85

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT. TEMP. 1 (Celsius)	VIR. TEMP. 1 (Celsius)	V. POT. TEMP. 1 (Celsius)	ABS. HUMID. 1 (Kg/m3)	REL. HUMID. 1 (Percent)	SPEC. HUMID. 1 (Kg/Kg)	VAP. PRES. 1 (Millibar)	S. VAP. PRES. 1 (Millibar)	REF. INDEX 1 (Kel. xM-2/3)
18.45	14.328	15.378	15.559	8.700E-03	71.51	7.042E-03	11.535	16.130	NO DATA

HEIGHT, Z2 (Meters)	POT. TEMP. 2 (Celsius)	VIR. TEMP. 2 (Celsius)	V. POT. TEMP. 2 (Celsius)	ABS. HUMID. 2 (Kg/m3)	REL. HUMID. 2 (Percent)	SPEC. HUMID. 2 (Kg/Kg)	VAP. PRES. 2 (Millibar)	S. VAP. PRES. 2 (Millibar)	REF. INDEX 2 (Kel. xM-2/3)
6.26	14.310	15.481	15.542	8.707E-03	71.13	7.050E-03	11.548	16.236	NO DATA

* CONTINUED ON PAGE 2

RUN NUMBER: 7811171030
PAGE: 2
START TIME: 10:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER, 1973):

STABILITY

GRAD. RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.964 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
10.745

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

Z/L AT Z1
NOT COMUTED

Z/L AT Z2
NOT COMPUTED

MONIN-OBUKHOV LENGTH
(Meters)
NOT COMPUTED

PSI1 AT Z1=NOT COMPUTED
PSI1 AT Z2=NOT COMPUTED
PSI2 AT Z1=NOT COMPUTED
PSI2 AT Z2=NOT COMPUTED

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
NOT COMPUTED

HUMIDITY FLUX
(Kg/sec m2)
NOT COMPUTED

SEN. HEAT FLUX
(Watts/m2)
NOT COMPUTED

TOTAL HEAT FLUX
(Watts/m2)
NOT COMPUTED

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.230

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.415E 02

WATER LAT. HEAT VAP.
(ITcal./Kg)
5.893E 05

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
NOT COMPUTED

SCALING SPEC. HUMD.
(Kg/Kg)
NOT COMPUTED

SCALING POT. TEMP.
(Kelvin)
NOT COMPUTED

SCALING V. POT. TEMP.
(Kelvin)
NOT COMPUTED

ROUGHNESS LENGH
(Meters)
NOT COMPUTED

DRAG COEF. AT 10 METERS
(Dimensionless)
NOT COMPUTED

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)Ln(Z1/Z2)]/
[(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= -8.06E-03

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -7.91E-07

N=POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 1.84E-03

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (Meters)
DVPT/DZ= 1.66E-03

PROFILE SLOPES (+=INCR. WITH HEIGHT)

GENERAL FORM: 'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert. Axis
PSI=PSI1
WS SLOPE=NOT COMPUTED

N=SPEC. HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
SH SLOPE= NOT COMPUTED

N=POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
PTK SLOPE=NOT COMPUTED

N=V. POT. TEMP. (Kelvin)
Z=HEIGHT (M) Vert. Axis
PSI=PSI2
VPTK SLOPE=NOT COMPUTED

N=LnTEMP. STRUC. (KxM-2/3)
Z=HEIGHT (M) Vert. Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL NOTES:

Profile data Richardson Number (RI) >+0.2; functional limitations exceeded for computing Z/L as a function of RI.
Profile Z/L and Z/L dependent calculations not executed.

* CONTINUED ON PAGE 3

RUN NUMBER: 7811171030
PAGE: 3
START TIME: 10:30: 0 PST
START DATE: 17 Nov 1978 (DAY 321)

E-O MET/OSP
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 5 APR 1979
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP. STRUC. (Kel. xM-2/3)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V. POT-WT TEMP (Kelvin)
14.204	3.65	9.09	NO DATA	15.500	-1.296	-1.198	-0.065	0.033

HEIGHT (Meters)	POT. TEMP. (Celsius)	VIR. TEMP. (Celsius)	V. POT. TEMP. (Celsius)	ABS. HUMID. (Kg/m3)	REL. HUMID. (Percent)	SPEC. HUMID. (Kg/Kg)	VAP. PRES. (Millibars)	S. VAP. PRES. (Millibars)	REF. INDEX (Kel. xM-2/3)
10.00	14.302	15.435	15.533	8.703E-03	71.30	7.047E-03	11.542	16.189	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE, 1978):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD. RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.574 AT GMH	-1.42E-02	1.076E-01	1.158E-02	1.230
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC. HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
10.75	2.17E-05	-1.640E-04	2.170E-05	2.415E 02
Z/L AT GMH	SEN. HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	WITH POT. TEMPERATURE (Meter Kel./sec)	WATER LAT. HEAT VAP. (ITcal./Kg)
-0.620	7.49E 00	-5.594E-02	6.019E-03	5.893E 05
Z/L AT 10 METERS	TOTAL HEAT FLUX (Watts/m2)	SCALING V. POT. TEMP. (Kelvin)		VAP. PRES. AT WT LEVEL (Millibar)
-0.577	-5.44E 02	4.066E 00		17.600
MONIN-OBUKHOV LENGTH (Meters)		ROUGHNESS LENGTH (Meters)		ABS. HUMID. AT WT LEVEL (Kg/m3)
-1.734E 01		7.056E-05		1.321E-02
		DRAG COEF. AT 10 METERS (Dimensionless)		
		8.707E-04		

* END

COMPUTER PROGRAM VARIABLE AND DATA ARRAY LABELS

See the NOMENCLATURE section for a definition of the parameter symbols.

I. "CRNCH2" PROGRAM:

Data Array Label:	Parameter:
D(1)	TUR1
D(2)	TUR2
D(3)	DP1
D(4)	DP2
D(5)	WS1
D(6)	WS2
D(7)	BP
D(9)	WD
D(10)	WTB
D(12)	SR
D(18)	AT1
D(19)	AT2

Variable Label:	Parameter:
r1	AT1
r2	AT2
r3	DP1
r4	DP1
r5	WS1
r6	WS2
r7	TUR1
r8	TUR2
r9	WTB
r10	BP
r11	WD
r12	SR
r13	LHV
r14	ATKM
r16	ZB
r17	VP1
r18	VP2
r19	SVP1
r20	SVP2
r21	AH1
r22	AH2
r23	RH1
r24	RH2
r25	SH1
r26	SH2
r27	OPTIR1
r28	OPTIR2
r29	VT1
r30	VT2
r31	PT1

r32	PT2
r33	VPT1
r34	VPT2
r35	DWSDZ
r36	DSHDZ
r37	DPTDZ
r38	DVPTDZ
r40	RI
r41	ZOL
r42	MOL
r43	Z1OL
r44	Z2OL
r45	PSI1Z1
r46	PSI1Z2
r47	PSI2Z1
r48	PSI2Z2
r49	FRICV
r50	RUFL
r51	SCLSH
r52	SCLPT
r53	SCLVPT
r54	AIRD
r55	MOFLX
r56	HUFLX
r57	HEFLX
r58	THFLX
r59	WSSLOP
r60	SHSLOP
r61	PTKSLOP
r62	VPTKSLOP
r63	TURSLOP
r64	GMH
r65	Z1
r66	Z2
r69	DRAG
r70	ZOLT
r71	SPHEAT

II. "CRNCH3" PROGRAM

Data Array Label:	Parameter:
D(10)	WTB

Variable Label:	Parameter:
r9	WTB
r12	SR
r13	ATB
r14	WSB
r15	DPB
r16	TURT
r18	ATWB
r19	PTWTB

r20	VTWTB
r21	VPTWTB
r22	ZB
r23	PTB
r24	VTB
r25	VPTB
r26	AHB
r27	RHB
r28	SHB
r29	VPB
r30	SVPB
r31	OPTIRT
r35	RSTRES
r36	VVHC
r38	VVPTC
r40	RIB
r41	ZOLB
r42	MOLB
r49	FRICVB
r50	RUFLB
r51	SCLSHB
r52	SCLPTB
r53	SCLVPTB
r54	AIRDB
r55	MOFLXB
r56	HUFLXB
r57	HEFLXB
r58	THFLXB
r60	LVHB
r61	VPW
r62	AHW
r64	GMH
r69	DRAGB
r70	ZOLTB
r71	SPHEATB

```
0: "SANNIC":
1:
2: "This program inputs data from the Monitor Labs system":
3: "via the RS-232 interface (S.C.=11).":
4: "It then manipulates the data and outputs to the Printronix":
5: "via the RS-232 interface (S.C.=10).":
6:
7: " A  contains the averages of the data the Monitor Labs":
8: " B  contains the averages of the data from the Knollenberg":
9: " B$ contains the time data":
10: "C  contains the converted analog data from the Knollenberg":
11: "C$ contains the analog data from the Knollenberg":
12: "D contains the final printout values":
13: "E  contains entered month(E1]), day([2]); julian day([3],[4])":
14: "   temporary storage for U[11]([5],[6]) and U[12]([7],[8])":
15: "   averaging period[9]; Divesor[10]; Parity error[11]":
16: "   temp range[12],  E[13]=sampling rate for Knullenburg":
17: "G  contains the no. of days in each month; temp day[13]":
18: "G$ contains the names of each month":
19: "H  contains the hours end[1], star  2], flag[3]":
20: "N  contains the minutes end[1], st  [2]":
21: "Q  contains the line number for ch .ning subprograms":
22: "S  contains the seconds end[1], s .rt[2]":
23: "U  contains the converted analog data":
24: "V[*]=met data used for Knullenburg computations":
25: "K contains the averaged digital data":
26: "Y$ containes the year for print date":
27: "Initializing data follows":
28: dim A[0:19,3],B[9,16],B$[300],C[9,16],C$[160],E[13],G[13],G$[12,3]
29: dim H[4],N[2],S[2],U[0:19],,$[496],D[0:30],V[0:20],Z$[220],Z[15]
30: dim K[10,2],L$[300],D$[20],Y$[4],W[9,2];250>Q;1111>E[4]
31: "PRINTER":10>J
32: files DATE:0,TIDET:0,CW-DAP:0,METDAT:0,PADATA:1
33: sread 1,G$,G[*];sread 2,T$
34: on end 4,"read5";on end 5,"FMT";dsp "FINDING END OF OLD DATA"
35: sread 4,D;r0+1>r0;jmp 0
36: "read5":sread 5,D;jmp 0
37: "FMT":0>D;ent "Averaging Period (minutes)",E[9];6*E[9]>E[9]
38: ent "Particle Sampling Period (sec.)",E[13]
39: "------  Format statements follow      ------":
40: fmt 1,2x,f7.3,4x,z
41: fmt 5,2x,f7.3,6x,f7.3
42:
43: "-------------  Set up Interrupts  ----------":
44: "sets bits in RS232 for Monitor L  s":
45: wtc 11,1;wtc 11,32;wtc 0,0;wait 5 0
46: wtc 11,1;wtb 11,64;wtb 11,75;wtb 11,54;wtc 11,0
47: "first the Micro Met":
48: "Allocate buffer ""micmet"" ":buf "micmet",B$,1
49: eir 11,4
50: "Go and accept data":tfr 11,"micmet",280
51: "will always go to ""READAT"" ":oni 11,"READAT";0>Y
52: "now the Knollenburg"
53: buf "nullen",C$,1
54: tfr 15,"nullen",136
55: oni 15,"KNOLDAT";0>Z;on end 4,"MAIN"
56:
57: "-------------  Main Program follows  ----------":
58: "MAIN":fmt 4,c,fz2.0,c,fz2.0,c,fz2.0,f9.0,c
59: wrt .4,"TIME ",H[1],":",N[1],":",S[1],E[9]-r99," To Go"
```

```
60: if Y;cll 'MET20'
61: gto "MAIN"
62: "fnzo":resave "SANNIC";dsp "SANNIC resaved";stp
63: "-------------  End of Main Program  ------------":
64:
65:
66:
67:
68:
69:
70: "------------------COMPUTE AND PRINT THE MET DATA-------------":
71: "MET20":chain "CRUNCH",0,72
72: dsp "CRUNCH";cll 'CRUNCH'
73: chain "CRNCH2",0,74
74: dsp "CRNCH2";cll 'CRNCH2';0>Y
75: wti 0,10;if not rdi 6mod2;prt "PRINTER DOWN";gto +38
76: "1979"}Y$;str(D[30])}D$;D$&" "}D$;D$&G$[D[29]]}D$;D$&" "}D$
77: D$&Y$}D$
78: dsp "SAVING CRNCH2 DATA";cll 'SAVDATA'
79: if r40>.2 or r40<-2;gto "SUBPRT"
80: chain "PRINT1",0,81
81: dsp "PRINT1";cll 'PRINT1'
82: chain "PRINT2",0,83
83: dsp "PRINT2";cll 'PRINT2'
84: chain "PRINT3",0,85
85: dsp "PRINT3";cll 'PRINT3'
86: chain "CRNCH3",0,87
87: dsp "CRNCH3";cll 'CRNCH3'
88: dsp "SAVING CRNCH3 DATA";cll 'SAVDATA'
89: chain "PRINT4",0,90
90: dsp "PRINT4";cll 'PRINT4'
91: chain "PRINT5",0,92
92: dsp "PRINT5";cll 'PRINT5'
93: chain "KPRINT",0,94
94: dsp "KPRINT";cll 'KPRINT'
95: gto "ENDPRINT"
96: "SUBPRT":
97: chain "PRINT1",0,98
98: dsp "PRINT1";cll 'PRINT1'
99: chain "PRINT6",0,100
100: dsp "PRINT6";cll 'PRINT6'
101: chain "PRINT7",0,102
102: dsp "PRINT7";cll 'PRINT7'
103: chain "CRNCH3",0,104
104: dsp "CRNCH3";cll 'CRNCH3'
105: dsp "SAVING CRNCH3 DATA";cll 'SAVDATA'
106: chain "PRINT4",0,107
107: dsp "PRINT4";cll 'PRINT4'
108: chain "PRINT5",0,109
109: dsp "PRINT5";cll 'PRINT5'
110: chain "KPRINT",0,111
111: dsp "KPRINT";cll 'KPRINT'
112: "ENDPRINT":
113: 0>Y;if E[3]#E[4];gsb "Date"
114: ret
115:
116:
117: "--------------Interrupt Service Routine for Micro Met--------------":
118: "Sub ""READAT"" reads the string of data (time and analog data) from":
119: "the  Monitor Lab via RS-232;  it sums data and leaves it in A[M,1]":
120: "READAT":dsp "READAT";if Y;gto "FLAG"
121:
122: sfg 14;0>r100;if flg15;1>r100;cfg 15
```

```
123:
124: for K=1 to 18
125: 13(K-1)+18)r97; if val(B$[r97,r97+2])=K-1; gto "B-OK"
126: if val(B$[r97,r97+2])#K+19; gto "B-OK"
127: "B-OK": val(B$[r97+2,r97+11])}U[K-1]
128: next K; if flg15; gto "BFLAG"
129: for K=19 to 20
130: r97+14}r97
131: val(B$[r97+1,r97+1])}E[12]; if val(B$[r97+2,r97+2])#K-18; beep; gto "BFLAG"
132: val(B$[r97+4,r97+9])/10^E[12]}U[K-1]
133: if val(B$[r97+3,r97+3])=2; -U[K-1]}U[K-1]
134: next K
135: for K=253 to 256; val(B$[K,K])+K[K-252,1]}K[K-252,1]; next K
136: for K=267 to 270; val(B$[K,K])+K[K-262,1]}K[K-262,1]; next K
137: val(B$[257,262])+K[9,1]}K[9,1]
138: val(B$[271,276])+K[10,1]}K[10,1]
139: if flg15; gto "BFLAG"
140: "Extract data from B$": sfg 14; val(B$[12])}S[1]; (val(B$[9])-S[1])/100}N[1]
141: (val(B$[6])-100N[1]-S[1])/10000}H[1]
142: (val(B$[2])-10000H[1]-100N[1]-S[1])/1000000}E[3]
143: if H[3]=0; H[1]}H[2]; N[1]}N[2]; S[1]}S[2]; 1}H[3]
144: E[10]+1}E[10]
145: if E[4]=1111; gsb "Date"
146: "DATASM sums the data and updates housekeeping parameters":
147: B$}L$; for K=0 to 19
148: U[K]+A[K,1]}A[K,1]; V[K]+U[K]}V[K]
149: next K
150: V[20]+1}V[20]
151: "Check the 5 housekeeping counters":
152: "V Ref A": if U[0]<=6.198; A[0,3]+1}A[0,3]
153: if U[0]>=6.21; A[0,3]+1}A[0,3]
154: "Man Flag": if U[13]>=4; A[13,3]+1}A[13,3]
155: "Zero Ref": if U[14]<=-.003; A[14,3]+1}A[14,3]
156: if U[14]>=.003; A[14,3]+1}A[14,3]
157: "V Ref B": if U[17]<=6.198; A[17,3]+1}A[17,3]
158: if U[17]>=6.21; A[17,3]+1}A[17,3]
159: "AC Freq": if E[5]; if abs(U[11]-E[5])>=1; E[6]+1}E[6]
160: "AC Volt": if E[7]; if abs(U[12]-E[7])>=.5; E[8]+1}E[8]
161: U[11]}E[5]; U[12]}E[7]
162: "Clear flags 14,15; if no. of scans = averaging period then CRUNCH data":
163: "FLAG": if (r99+1}r99)>=E[9]; 1}Y; 0}r99
164: sfg 14; if r100; sfg 15
165: "Empty buffer ""micmet""":
166: wtc 11,1; wtb 11,64; wtb 11,75; wtb 11,54; wtc 11,0
167: "Reset buffer": buf "micmet"; tfr 11,"micmet",284
168: iret
169: "BFLAG": beep
170: "try to get back into sync": dsp "SYNC"; wait 2000; gto "FLAG"
171: "--------------Interrupt Service Routine for AMS-----------------":
172: "KNOLDAT": dsp "KNOLDAT"; if E[4]>1000; wait 1000; gsb "Date"; gto "KFLAG"
173: if Y or V[20]=0; gto "KFLAG"
174: " "}Z$[1,220]; sfg 14; 0}r100; if flg15; 1}r100
175: for K=78 to 130 by 4
176: num(C$[K])*1e3+num(C$[K+1])*100+num(C$[K+2])*10+num(C$[K+3])}U[(K-74)/4]
177: next K
178: num(C$[134])*1e3+num(C$[135])*100+num(C$[136])*10+num(C$[9])}U[15]
179: "range switch": num(C$[13])+1}r90
180: if r90<1 or r90>4; gto "KFLAG"
181: "get ASSP channel width": rread 3,r90,Z[*]
182: for K=0 to 19; V[K]/V[20]}V[K]; next K
183: "now compute met parameters":
184: "WD": -225}K; if V[9]<6.25; 135}K
185: K+36V[9]}V[9]
```

```
186: "WS": .054+2V[5]}V[5]
187: "DP": -2.08062282e1+6.265462016V[3]-5.045331272e-2V[3]^2}K
188: K+3.015648066e-3V[3]^3-7.676841926e-5V[3]^4}V[3]
189: "BP": 9.411778322e2+1.420666658e1V[7]+2.645222116e-1V[7]^2}K
190: K-2.595572262e-2V[7]^3+7.80886364e-4V[7]^4}V[7]
191: "put the rest of the computations here":
192: "Elevator, set to 1": 1}r96; r90+r96*4}r90
193: for K=1 to 15; U[K]/(Z[K]*100*V[5]*E[13]*5.2e-3)+B[r90,K]}B[r90,K]; next K
194: .1*V[5]*E[13]*5.2e-3+W[r90,1]}W[r90,1]
195: "B[I,16] = Divisor": B[r90,16]+1}B[r90,16]
196: fxd 0; for K=1 to 15; str(U[K])}Z$[71+(K-1)*5,75+(K-1)*5]; next K
197: for K=14 to 70 by 4
198: num(C$[K])*1e3+num(C$[K+1])*100+num(C$[K+2])*10+num(C$[K+3])}U[(K-10)/4]
199: next K
200: "get Area data for OAP": rread 3,5,Z[*]
201: for K=1 to 15; U[K]/(13*Z[K]*E[13]*V[5]*100)+B[9,K]}B[9,K]; next K
202: E[13]*V[5]*.001+W[9,1]}W[9,1]
203: B[9,16]+1}B[9,16]
204: fxd 0; for K=1 to 15; str(U[K])}Z$[146+(K-1)*5,150+(K-1)*5]; next K
205: cll 'SAVPADATA'
206: for K=0 to 20; 0}V[K]; next K
207: "Reset buffer": if r100; sfg 15
208: "KFLAG": buf "nullen"; tfr 15,"nullen",136
209: iret
210:
211: "Date": 0}G[13]; E[3]}E[4]
212: for M=1 to 12
213: if E[3]<G[13]; jmp 3
214: G[13]+G[M]}G[13]
215: next M
216: M-1}E[1]; E[3]-(G[13]-G[M-1])}E[2]; ret
217:
218: "SAVPADATA":
219: sprt 5,E[3],H[1],N[1],S[1],E[13],V[5],V[9],V[18],V[3],V[7],r90
220: 1}A
221: ret
222:
223:
224:
225: "SAVDATA":
226: for I=1 to 71; sprt 4,rI; next I
227: ret
228:
229:
230:
231:
232:
233:
234:
235:
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```
0: "SANPRT":
1:
2: "This program prints raw and calculated data previously recorded":
3: "on disc (0)":
4:
5:
6:
7: " A  contains the averages of the data the Monitor Labs":
8: " B  contains the averages of the data from the Knollenberg":
9: " B$ contains the time data":
10: "C  contains the converted analog data from the Knollenberg":
11: "C$ contains the analog data from the Knollenberg":
12: "D contains the final printout values":
13: "E  contains entered month([1]), day([2]); julian day([3],[4])":
14: "   temporary storage for U[11]([5],[6]) and U[12]([7],[8])":
15: "   averaging period[9]; Divesor[10]; Parity error[11]":
16: "   temp range[12],  E[13]=sampling rate for Knullenburg":
17: "Q  contains the no. of days in each month; temp day[13]":
18: "Q$ contains the names of each month":
19: "H  contains the hours end[1], start[2], flag[3]":
20: "N  contains the minutes end[1], start[2]":
21: "Q  contains the line number for chaining subprograms":
22: "S  contains the seconds end[1], start[2]":
23: "U  contains the converted analog data":
24: "V[*]=met data used for Knullenburg computations":
25: "K contains the averaged digital data":
26: "Y$ containes the year for print date":
27: "Initializing data follows":
28: dim A[0:19,3],B[9,16],B$[300],C[9,16],C$[150],E[13],Q[13],Q$[12,3]
29: dim H[3],N[2],S[2],U[0:19],T$[496],D[0:30],V[0:20],Z$[220],Z[15],P[3]
30: dim K[10,2];140>Q;1111>E[4]
31: dim F$[7],D$[20],Y$[4]
32: "PRINTER":10>J
33: "1979">Y$;"">D$;"">F$
34: "Averaging Period (minutes)":1>E[9];6*E[9]>E[9]
35: "Particle Sampling Period (sec.)":60>E[13]
36: files DATE,TIDET,CW-OAP,METDAT;sread 1,Q$,Q[*];sread 2,T$
37: "ASK":rread 4,1;ent "RUN NUMBER TO BE PRINTED (0 for ALL)",P[1]
38: ent "ENTER PRINT DATE (DAY):  ",F$;F$&" ">D$
39: ent "ENTER PRINT DATE (MONTH):  ",F$;F$&" ">F$;D$&F$>D$;D$&Y$>D$
40: "------  Format statements follow  ---------":
41: fmt 1,2x,f7.3,4x,z
42: fmt 5,2x,f7.3,6x,f7.3
43: on end 4,"ASK"
44: "MAIN":sread 4,D[*],E[*],K[*],U[*];gsb "DATA"
45:
46: D[0]>A[0,3];D[13]>A[13,3];D[14]>A[14,3];D[17]>A[17,3]
47: if D[20]#abs(P[1]) and P[1]>0;cll 'DATA';gto "MAIN"
48: if D[20]<abs(P[1]) and P[1]<0;cll 'DATA';gto "MAIN"
49: for M=0 to 19;U[M]>A[M,2];next M
50: cll 'CRUNCH';cll 'TTT'
51: if P[1]>0;gto "ASK"
52: gto "MAIN"
53: "fnzo":resave "SANPRT";dsp "SANPRT resaved";stp
54: "-------------  End of Main Program  ------------":
55:
56:
57:
58:
59: "------------------COMPUTE AND PRINT THE MET DATA-------------":
```

```
60:
61:
62: "TTT":
63: if r40>.2 or r40<-2;gto "SUBPRT"
64: chain "PRINT1",0,65
65: dsp "PRINT1";cll 'PRINT1'
66: chain "PRINT2",0,67
67: dsp "PRINT2";cll 'PRINT2'
68: chain "PRINT3",0,69
69: dsp "PRINT3";cll 'PRINT3'
70: dsp "READING DATA"
71: cll 'DATA'
72: chain "PRINT4",0,73
73: dsp "PRINT4";cll 'PRINT4'
74: chain "PRINT5",0,75
75: dsp "PRINT5";cll 'PRINT5'
76: ret
77: "SUBPRT":
78: chain "PRINT1",0,79
79: dsp "PRINT1";cll 'PRINT1'
80: chain "PRINT6",0,81
81: dsp "PRINT6";cll 'PRINT6'
82: chain "PRINT7",0,83
83: dsp "PRINT7";cll 'PRINT7'
84: dsp "READING DATA"
85: cll 'DATA'
86: chain "PRINT4",0,87
87: dsp "PRINT4";cll 'PRINT4'
88: chain "PRINT5",0,89
89: dsp "PRINT5";cll 'PRINT5'
90: ret
91:
92: "DATA":
93: for I=1 to 71;sread 4,r1;next I
94: ret
95: "Sub ""CRUNCH"" takes data from array A[J,1]; puts it into engineering":
96: "units; runs it thru some formulas;stores it in both A[J,2] and A[J,3]":
97: "CRUNCH":D[27]}E[10]
98: E[4]}D[28];E[1]}D[29];E[2]}D[30]
99: "TUR1":(1.07722*10^(1-abs(A[1,2]/2)))^2}A[1,3]
100: "TUR2":(1.07722*10^(1-abs(A[2,2]/2)))^2}A[2,3]
101: "DP1FCAL":D[22]+D[24]/60}r67
102: if r67>7.983;gto +2
103: .054-.002(r67+8)}r67;A[3,2]+r67}r67;gto +4
104: if r67>15.983;gto +2
105: .022+.004(r67-8)}r67;A[3,2]+r67}r67;gto +2
106: .054-.002(r67-16)}r67;A[3,2]+r67}r67
107: "DP1":-20.825+6.25047r67-4.04968e-2r67^2}A[3,3]
108: A[3,3]+1.43719e-3r67^3}A[3,3]
109: "DP2FCAL":A[4,2]+.016}r67
110: "DP2":-20.5158+6.06103r67-2.1513e-2r67^2}A[4,3]
111: A[4,3]+1.80459e-3r67^3}A[4,3]
112: if A[5,2]<=2.57;gto +3
113: "WS1":3.08914e-2+1.93793A[5,2]-6.72817e-4A[5,2]^2}A[5,3]
114: gto +3
115: "-WS1":-6.32834e-2+2.42269A[5,2]-.399002A[5,2]^2}A[5,3]
116: A[5,3]+8.72726e-2A[5,2]^3}A[5,3]
117: if A[6,2]<=2.558;gto +3
118: "WS2":.181091+1.92438A[6,2]+1.55926e-4A[6,2]^2}A[6,3]
119: gto +3
120: "-WS2":-7.13544e-2+2.52039A[6,2]-.404911A[6,2]^2}A[6,3]
121: A[6,3]+8.22668e-2A[6,2]^3}A[6,3]
122: "BP":9.4151e2+1.4123e1A[7,2]+2.2644e-1A[7,2]^2}A[7,3]
```

```
123:  A[7,3]-1.41907e-2A[7,2]^3}A[7,3]
124:  "SkyR":139.46A[8,2]}A[8,3]
125:  "WDir":if A[9,2]<6.324;145+34A[9,2]}A[9,3];jmp 2
126:  -215+34A[9,2]}A[9,3]
127:  "WTB":10+A[10,2]}A[10,3]
128:
129:  "ACF":56+A[11,2]}A[11,3]
130:  "ACV":90+10A[12,2]}A[12,3]
131:  "AirT1 & T2 ":A[18,2]}A[18,3];A[19,2]}A[19,3]
132:  for M=0 to 19
133:  if M=13 or M=14 or M=17;gto +2
134:  A[M,3]}D[M]
135:  next M
136:  ret
137:
138:
139:
140:
141:
142:
*24735
```

```
0:
1: "Sub ""CRUNCH"" takes data from array A[J,1]; puts it into engineering":
2: "units; runs it thru some formulas;stores it in both A[J,2] and A[J,3]":
3: "CRUNCH": if E[10]=0;gto +5
4: "Average all A[M,1]": for M=0 to 19
5: A[M,1]/E[10]}A[M,2];0}A[M,1]
6: next M
7: for M=1 to 10;K[M,1]/E[10]}K[M,2];0}K[M,1];next M
8: E[10]}D[27];0}E[10];E[4]}D[28];E[1]}D[29];E[2]}D[30]
9: H[1]}D[21];N[1]}D[23];S[1]}D[25];H[2]}D[22];N[2]}D[24];S[2]}D[26];0}H[3]
10: 7.8e9+D[29]*1e6+D[30]*1e4+D[22]*100+D[24]}D[20]
11: "TUR1": (1.07722*10^(1-abs(A[1,2]/2)))^2}A[1,3]
12: "TUR2": (1.07722*10^(1-abs(A[2,2]/2)))^2}A[2,3]
13: "DP1FCAL": D[22]+D[24]/60}r67
14: if r67>7.983;gto +2
15: .054-.002(r67+8)}r67;A[3,2]+r67}r67;gto +4
16: if r67>15.983;gto +2
17: .022+.004(r67-8)}r67;A[3,2]+r67}r67;gto +2
18: .054-.002(r67-16)}r67;A[3,2]+r67}r67
19: "DP1": -20.825+6.25047r67-4.04968e-2r67^2}A[3,3]
20: A[3,3]+1.43719e-3r67^3}A[3,3]
21: "DP2FCAL": A[4,2]+.016}r67
22: "DP2": -20.5158+6.06103r67-2.1513e-2r67^2}A[4,3]
23: A[4,3]+1.80459e-3r67^3}A[4,3]
24: if A[5,2]<=2.57;gto +3
25: "WS1": 3.08914e-2+1.93793A[5,2]-6.72817e-4A[5,2]^2}A[5,3]
26: gto +3
27: "-WS1": -6.32834e-2+2.42269A[5,2]-.399002A[5,2]^2}A[5,3]
28: A[5,3]+8.72726e-2A[5,2]^3}A[5,3]
29: if A[6,2]<=2.558;gto +3
30: "WS2": .181091+1.92438A[6,2]+1.55926e-4A[6,2]^2}A[6,3]
31: gto +3
32: "-WS2": -7.13544e-2+2.52039A[6,2]-.404911A[6,2]^2}A[6,3]
33: A[6,3]+8.22668e-2A[6,2]^3}A[6,3]
34: "BP": 9.4151e2+1.4123e1A[7,2]+2.2644e-1A[7,2]^2}A[7,3]
35: A[7,3]-1.41907e-2A[7,2]^3}A[7,3]
36: "SkyR": 139.46A[8,2]}A[8,3]
37: "WDir": if A[9,2]<6.324;145+34A[9,2]}A[9,3];jmp 2
38: -215+34A[9,2]}A[9,3]
39: "WTB": 10+A[10,2]}A[10,3]
40:
41: "ACF": 56+A[11,2]}A[11,3]
42: "ACV": 90+10A[12,2]}A[12,3]
43: "AirT1 & T2 ": A[18,2]}A[18,3];A[19,2]}A[19,3]
44: for M=0 to 19;A[M,3]}D[M];0}A[M,3];A[M,2]}U[M];next M
45: for M=1 to 9;if B[M,16]=0;gto "KNEXT"
46: for J=1 to 15
47: B[M,J]/B[M,16]}C[M,J];0}B[M,J]
48: next J
49: 0}B[M,16]
50: "KNEXT":next M
51: for M=1 to 9;W[M,1]}W[M,2];0}W[M,1];next M
52: "now store the data on disk":
53: sprt 4,D[*],E[*],K[*],U[*];0}Y
54: ret
55: "fnzo":resave "CRUNCH";dsp "CRUNCH resaved";stp
56:
57:
*29295
```

```
0: "set flag 14 to ignore math errors":
1: "Sub ""CRNCH2"" contains the formulas for the 68 r-variables":
2: "CRNCH2":rad;flt ;sfg 14;cfg 15
3: D[18]}r1;D[19]}r2
4: D[3]}r3;D[4]}r4
5: D[5]}r5;D[6]}r6
6: D[1]}r7;D[2]}r8
7: D[10]}r9;D[7]}r10
8: D[9]}r11
9: D[8]}r12
10: "0000000"}F$
11: D[21]}r67
12: deg;('TTABLE'(E[4]+0,D[22]*100+D[24]+E[9]/12)-2.5)*.3048}r68;rad
13: "ATKM":('ATK1'+'ATK2')/2}r14
14: "VP1":10^('GGC13'*'B1'+'GGC14'*'D1'+'GGC15'*'F1')}r17
15: 1013.246*'A1'^'GGC12'r17}r17
16: "VP2":10^('GGC13'*'B2'+'GGC14'*'D2'+'GGC15'*'F2')}r18
17: 1013.246*'A2'^'GGC12'r18}r18
18: "SVP1":10^('GGC13'*'G1'+'GGC14'*'K1'+'GGC15'*'M1')}r19
19: 1013.246*'G1'^'GGC12'r19}r19
20: "SVP2":10^('GGC13'*'G2'+'GGC14'*'K2'+'GGC15'*'M2')}r20
21: 1013.246*'G2'^'GGC12'r20}r20
22: "AH1":r17(100/('WVGC'*'ATK1'))}r21
23: "AH2":r18(100/('WVGC'*'ATK2'))}r22
24: "RH1":100r17/r19}r23
25: "RH2":100r18/r20}r24
26: "SH1":.62197r17/r10}r25
27: "SH2":.62197r18/r10}r26
28: "VT1":'VTK1'-273.16}r29
29: "VT2":'VTK2'-273.16}r30
30: "Z1":18.45}r65
31: "Z2":6.258}r66
32: "ZB":10}r16
33: "GMH":\(r65r66)}r64
34: "PT1":'PTK1'-273.16}r31
35: "PT2":'PTK2'-273.16}r32
36: "VPT1":'VPTK1'-273.16}r33
37: "VPT2":'VPTK2'-273.16}r34
38: "DWSDZ":(r5-r6)*ln(r65/r66)/r64}r35
39: "DSHDZ":(r25-r26)*ln(r65/r66)/r64}r36
40: "DVPTDZ":('VPTK1'-'VPTK2')*ln(r65/r66)/r64}r38
41: "DPTDZ":('PTK1'-'PTK2')*ln(r65/r66)/r64}r37
42:
43: "RI":'QA'r37/'VPTKM'r35^2}r40
44: "NEWTON-RAPHSON":'ZOL'(r40)}r41;if r41=0;.00001}r41
45: "MOL":r64/r41}r42
46: "Z1OL":r65/r42}r43
47: "Z2OL":r66/r42}r44
48: 'PSI1Z1'}r45
49: 'PSI1Z2'}r46
50: 'PSI2Z1'}r47
51: 'PSI2Z2'}r48
52: r5-r6}r67;if r67=0;.001}r67;"1"}F$[3,3]
53: "WSSLOP":(ln(r65)-r45-(ln(r66)-r46))/r67}r59
54: r25-r26}r67;if r67=0;1e-7}r67;"1"}F$[4,4]
55: "SHSLOP":(ln(r65)-r47-(ln(r66)-r48))/r67}r60
56: 'PTK1'-'PTK2'}r67;if r67=0;.0001}r67;"1"}F$[5,5]
57: "PTKSLOP":(ln(r65)-r47-(ln(r66)-r48))/r67}r61
58: 'VPTK1'-'VPTK2'}r67;if r67=0;.0001}r67;"1"}F$[6,6]
59: "VPTKSLOP":(ln(r65)-r47-(ln(r66)-r48))/r67}r62
```

```
60: ln(r7)-ln(r8)}r67;if r67=0;-11.51292546}r67;"1"}F$[7,7]
61: "TURSLOP":(ln('ZTUR1')-ln('ZTUR2'))/r67}r63
62: "FRICV":'VKC'/r59}r49
63: "DRAG":(r49/r16)^2}r69
64: "RUFL":exp('RL')}r50
65: if 'RL'<-227.95;1e-99}r50;"1"}F$[1,1]
66: if 'RLB'<-227.95;"1"}F$[2,2]
67: "SCLSH":'VKC'/.74r60}r51
68: "SCLPT":'VKC'/.74r61}r52
69: "SCLVPT":'VKC'/.74r62}r53
70: "AIRD":.34838r10/'VTKM'}r54
71: "SPHEAT":.24(1+.9((r25+r26)/2))*1000}r71
72: "MOFLX":-r54r49^2}r55
73: "HUFLX":-r54r49r51}r56
74: "HEFLX":-r54r49r52(4.18684r71)}r57
75: "LHV":(597.31-.56525*'ATM')*1e3}r13
76: "THFLX":'BOYFLX'-r12}r58
77: "OPTIR1":(77.6r10/'ATK1'^2)^2*(1+.00753/'LAMBDA'^2)^2*r7*1e-12}r27
78: "OPTIR2":(77.6r10/'ATK2'^2)^2*(1+.00753/'LAMBDA'^2)^2*r8*1e-12}r28
79: "ZOLT":r16/r42}r70
80: ret
81:
82: "----------------------Functions used in Crunch 2-----------------":
83:
84:
85: "M1":ret 10^('GGC11'*'J1')-1
86: "M2":ret 10^('GGC11'*'J2')-1
87: "WVGC":ret 4.615e2
88: "VTK1":ret 'ATK1'+.608r25*'ATK1'
89: "VTK2":ret 'ATK2'+.608r26*'ATK2'
90: "ZTUR1":ret 19.05
91: "ZTUR2":ret 6.858
92: "PTK1":ret 'ATK1'+.0098*r65
93: "PTK2":ret 'ATK2'+.0098*r66
94: "VPTK1":ret 'VTK1'+.0098*r65
95: "VPTK2":ret 'VTK2'+.0098*r66
96: "VPTKM":ret ('VPTK1'+'VPTK2')/2
97: "GA":ret 9.7959
98: "W1":ret (1-15r43)^.25
99: "W2":ret (1-15r44)^.25
100: "Y1":ret (1-9r43)^.5
101: "Y2":ret (1-9r44)^.5
102: "VKC":ret .35
103: "WSM":ret (r5+r6)/2
104: "RL":ret ln(r64)-'WSM''VKC'/r49
105: "WSB":ret r5-.61195(r5-r6)
106: "DRAGB":ret (.63+.066'WSB')*1e-3
107: "RSTRES":ret 'DRAGB'*'WSB'
108: "FRICVB":ret \abs('RSTRES')
109: "RLB":ret ln(r16)-'WSB''VKC'/'FRICVB'
110: "VTKM":ret ('VTK1'+'VTK2')/2
111: "ATM":ret r14-273.16
112: "BOYFLX":ret r57+r56*r13*4.18684
113: "LAMBDA":ret 5.4
114: "ATK1":ret r1+273.16
115: "ATK2":ret r2+273.16
116: "DPK1":ret r3+273.16
117: "DPK2":ret r4+273.16
118: "A1":ret 373.16/'DPK1'
119: "A2":ret 373.16/'DPK2'
120: "B1":ret 'A1'-1
121: "B2":ret 'A2'-1
122: "C1":ret 1-1/'A1'
```

```
123: "C2":ret 1-1/'A2'
124: "GGC10":ret -3.49149
125: "GGC11":ret 11.344
126: "GGC12":ret 5.02808
127: "GGC13":ret -7.90298
128: "GGC14":ret 8.1328e-3
129: "GGC15":ret -1.3816e-7
130: "D1":ret 10^('GGC10'*'B1')-1
131: "D2":ret 10^('GGC10''B2')-1
132: "F1":ret 10^('GGC11'*'C1')-1
133: "F2":ret 10^('GGC11'*'C2')-1
134: "G1":ret 373.16/'ATK1'
135: "G2":ret 373.16/'ATK2'
136: "Q1":ret 'G1'-1
137: "Q2":ret 'G2'-1
138: "J1":ret 1-1/'G1'
139: "J2":ret 1-1/'G2'
140: "K1":ret 10^('GGC10'*'Q1')-1
141: "K2":ret 10^('GGC10'*'Q2')-1
142: "PSI1Z1":if r40>0;gto "+PSI1Z1"
143: ret 2ln((1+'W1')/2)+ln((1+'W1'^2)/2)-2atn('W1')+(/2
144: "+PSI1Z1":ret -4.7r43
145:
146: "PSI1Z2":if r40>0;gto "+PSI1Z2"
147: ret 2ln((1+'W2')/2)+ln((1+'W2'^2)/2)-2atn('W2')+(/2
148: "+PSI1Z2":ret -4.7r44
149: "PSI2Z1":if r40>0;gto "+PSI2Z1"
150: ret ln((1+'Y1')/2)
151: "+PSI2Z1":ret -4.7r43/.74
152:
153: "PSI2Z2":if r40>0;gto "+PSI2Z2"
154: ret ln((1+'Y2')/2)
155: "+PSI2Z2":ret -4.7r44/.74
156:
157:
158: "Program to find stability, given Richardsons number":
159:
160: "ZOL":if p1=0;ret 0
161: "Richardsons number p1":
162: "use Newton-Raphson method to accuracy .0005":
163:
164: if p1<0;gto "-RI"
165: "+RI":if p1>.2;ret 1e4
166: 22.09p1-4.7}p2;9.4p1-.74}p3;p1}p4
167: p3p3-4p2p4}p5
168: ret (-p3-p5^.5)/2p2
169:
170:
171: "-RI":
172: "use RI as 1st guess":p1}p2
173: "-next":p2-'f(x)'(p2,p1)/'-df(x)/dx'(p2,p1)}p3
174: sfg 14;if abs(p3-p2)/abs(p3)<.0005;ret p3
175: cfg 14;p3}p2;gto "-next"
176:
177:
178:
179: "f(x)":
180:
181: "-f(x)":ret .74*p1*(1-15*p1)^.5/(1-9*p1)^.5-p2
182:
183:
184:
185:
```

```
186:
187: "-df(x)/dx":ret .74(1-15p1)^.5-11.1p1/(2-30p1)^.5+9p2/(2-18p1)^.5
188: "-----------------End of Functions-----------------":
189:
190:
191: "FNZ1":resave "NCRNC2";dsp "NCRNC2 resaved";ret
192: "TTABLE":p1-304}p1;fxd 2
193: "p1 is the julian date, convert it to NOV":
194: "TIDE":16*(p1-1)+1}p0;p0+4}p8
195: if p0<1 or p8>496;gto "terr"
196: itf(T$[p0,p0+1])}p3;itf(T$[p8,p8+1])}p5
197: if (p3+2400*int((p0-1)/16)}p3)>(p2+2400*(p1-1)}p7);p0-4}p0;p8-4}p8;gto -2
198: if p5=0;p8+4}p8;gto -3
199: if (p5+2400*int((p8-1)/16)}p5)<p7;p8+4}p8;p0+4}p0;gto -4
200: itf(T$[p0+2,p0+3])/10}p4;itf(T$[p8+2,p8+3])/10}p6
201: 'mtd'(p7)}p7;'mtd'(p3)}p3;'mtd'(p5)}p5
202: if p3=p5;gto "terr"
203: ret p6-(p6-p4)*(cos((p7-p3)*180/(p5-p3))+1)/2
204: "mtd":ret int(p1/100)+frc(p1/100)/.6
205: "terr":ret -999
*3753
```

```
0:  "set flag 14 to ignore math errors":
1:  "sub""CRNCH3"" contains the bulk formulas for page 3":
2:  "CRNCH3":rad;flt ;sfg 14;cfg 15
3:  D[18]}r1;D[19]}r2
4:  D[3]}r3;D[4]}r4
5:  D[5]}r5;D[6]}r6
6:  D[1]}r7;D[2]}r8
7:  D[10]}r9;D[7]}r10
8:  D[9]}r11
9:  D[8]}r12
10:  "WSB":r5-.61195(r5-r6)}r14
11:  "TURT":exp('TRT')}r16
12:  "DPB":'DPKB'-273.16}r15
13:  "ATB":'ATKB'-273.16}r13
14:  1013.246*'AB'^'GGC12'}r67
15:  "VPB":r67*10^('GGC13''BB'+'GGC14''DB'+'GGC15''FB')}r29
16:  1013.246*'QB'^'GGC12'}r67
17:  "SVPB":r67*10^('GGC13''QB'+'GGC14''KB'+'GGC15''MB')}r30
18:  "ZB":10}r22
19:  "GMH":\('Z1''Z2')}r64
20:  "AHB":r29(100/'WVGC''ATKB')}r26
21:  "RHB":r29/r30*100}r27
22:  "SHB":r29/r10*.62197}r28
23:  "VTB":'VTKB'-273.16}r24
24:  "PTB":'PTKB'-273.16}r23
25:  "VPTB":'VPTKB'-273.16}r25
26:  "ATWTB":'ATKB'-'WTKB'}r18
27:  "PTWTB":'PTKB'-'WTKB'}r19
28:  "VTWTB":'VTKB'-'WTKB'}r20
29:  "VPTWTB":'VPTKB'-'WTKB'}r21
30:  "SPHEATB":.24(1+.9r28)*1e3}r71
31:  "AIRDB":.34838r10/'VTKB'}r54
32:  "VVPTC":.002-'SHTC'r14r19}r38
33:  "HEFLXB":r54r38*4.18684r71}r57
34:  1013.246*'AW'^'GGC12'}r67
35:  "VPW":r67*10^('GGC13''BW'+'GGC14''DW'+'GGC15''FW')}r61
36:  "AHW":r61(100/'WVGC''WTKB')}r62
37:  "VVHC":'MTC'r14(r62-r26)}r36
38:  "HUFLXB":r36}r56
39:  "LHVB":(597.31-.56525r13)*1e3}r60
40:  "THFLXB":'BOYFLXB'-r12}r58
41:  "DRAGB":(.63+.066r14)*1e-3}r69
42:  "RSTRES":r69*r14^2}r35
43:  "MOFLXB":-r54*r35}r55
44:  "FRICVB":\abs(r35)}r49
45:  "RUFLB":exp('RLB')}r50
46:  if 'RLB'<-227.95;1e-99}r50
47:  "SCLSHB":-r56/(r54*r49)}r51
48:  "SCLPTB":-r57/(r54r49*4.18684r71)}r52
49:  "SCLVPTB":-r58/(r54r49*4.18684r71)}r53
50:  "MOLB":-'ATKB'r49^3/'GA'r38'VKC'}r42
51:  "ZOLB":r64/r42}r41
52:  if r41>0;gto "+RIB"
53:  "RIB":.74r41*((1-15r41)^.5/(1-9r41)^.5)}r40
54:  gto +2
55:  "+RIB":r41(.74+4.7r41)/(1+4.7r41)^2}r40
56:  "ZOLTB":r22/r42}r70
57:  "OPTIRT":(77.6r10/'ATKB'^2)^2*(1+.00753/'LAMBDA'^2)^2*r16*1e-12}r31
58:  ret
59:
```

```
60:
61:
62: "-------------------------Functions used in CRNCH3-----------------":
63:
64:
65: "GGC10":ret -3.49149
66: "GGC11":ret 11.344
67: "GGC12":ret 5.02808
68: "GGC13":ret -7.90298
69: "GGC14":ret 8.1328e-3
70: "GGC15":ret -1.3816e-7
71: "DPK1":ret r3+273.16
72: "DPK2":ret r4+273.16
73: "ATK1":ret r1+273.16
74: "ATK2":ret r2+273.16
75: "WVGC":ret 4.615e2
76: "VKC":ret .35
77: "GA":ret 9.7959
78: "BOYFLXB":ret r57+r56*r60*4.18684
79: "LAMBDA":ret 5.4
80: "Z1":ret 18.45
81: "Z2":ret 6.258
82: "DPKB":ret 'DPK1'-.53098('DPK1'-'DPK2')
83: "ATKB":ret 'ATK1'-.55743('ATK1'-'ATK2')
84: "TRT":ret ln(r7)-.630821n(r7/r8)
85: "AB":ret 373.16/'DPKB'
86: "BB":ret 'AB'-1
87: "CB":ret 1-1/'AB'
88: "DB":ret 10^('GGC10'*'BB')-1
89: "FB":ret 10^('GGC11'*'CB')-1
90: "QB":ret 373.16/'ATKB'
91: "QB":ret 'QB'-1
92: "JB":ret 1-1/'QB'
93: "KB":ret 10^('GGC10'*'QB')-1
94: "MB":ret 10^('GGC11'*'JB')-1
95: "VTKB":ret 'ATKB'*(1+.608*r28)
96: "PTKB":ret 'ATKB'+.0098r22
97: "VPTKB":ret 'VTKB'+.0098r22
98: "WTKB":ret r9+273.16
99: "SHTC":ret 9.2e-4
100: "AW":ret 373.16/'WTKB'
101: "BW":ret 'AW'-1
102: "CW":ret 1-1/'AW'
103: "DW":ret 10^('GGC10'*'BW')-1
104: "FW":ret 10^('GGC11'*'CW')-1
105: "MTC":ret 1.32e-3
106: "RLB":ret ln(r22)-r14'VKC'/r49
*31033
```

```
0: "PRINT1": if D[29]=0;1)D[29]
1: fmt 9,28x,"     ELECTRO-OPTICS METEOROLOGY / OPTI",z;wrt J+.9
2: fmt 9,"CAL SIGNATURES PROGRAM (E-O MET/OPS)      ",/;wrt J+.9
3: fmt 9,54x,"NAVAL RESEARCH LABORATORY";wrt J+.9
4: fmt 9,53x,"ATMOSPHERIC PHYSICS BRANCH";wrt J+.9
5: fmt 9,49x,"MARINE ATMOSPHERIC RESEARCH STATION";wrt J+.9
6: fmt 9,51x,"SAN NICOLAS ISLAND, CALIFORNIA",/;wrt J+.9
7: fmt 9,46x,"* * * * MICROMETEOROLOGICAL DATA * * * *",2/;wrt J+.9
8: 7.8e9+D[29]*1e6+D[30]*1e4+D[22]*1e2+D[24])M
9: fmt 9,"  RUN NUMBER: ",f11.0,z;wrt J+.9,M
10: fmt 9,43x,"PRINT DATE:   ",c12;wrt J+.9,D$
11: fmt 9,"  START TIME:  ",f2.0,":",f2.0,":",z;wrt J+.9,D[22],D[24]
12: fmt 9,f2.0," PST",41x,"DATA SAMPLING RATE (ALL ",z;wrt J+.9,D[26]
13: fmt 9,"CHANNELS): 6/Min";wrt J+.9
14: fmt 9,"  END    TIME:  ",f2.0,":",f2.0,":",z;wrt J+.9,D[21],D[23]
15: fmt 9,f2.0," PST",41x,"DATA AVERAGING PERIOD: ",f3.0," Min"
16: wrt J+.9,D[25],E[9]/6
17: fmt 9,"  START DATE:  ",f2.0,1x,c3," 1978",z;wrt J+.9,D[30],G$[D[29]]
18: fmt 9," (DAY ",f3.0,")",32x,"NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL",/
19: wrt J+.9,E[4]
20: fmt 9,"* ANALOG CHANNEL RAW DATA (AVERAGE VDC): ",/;wrt J+.9
21: fmt 9,"  No.00",8x,"No.01",8x,"No.02",8x,"No.03",8x,"No.04",8x,z;wrt J+.9
22: fmt 9,"No.05",8x,"No.06",8x,"No.07",8x,"No.08",8x,"No.09";wrt J+.9
23: fmt 9,"  VOLT.REF.A    TEMP.STRUC.1 TEMP.STRUC.2 DEW POINT1    ",z;wrt J+.9
24: fmt 9,"DEW POINT2   WIND SPEED1  WIND SPEED2  BAR.PRES.      ",z;wrt J+.9
25: fmt 9,"SKY RAD.      WIND DIR.";wrt J+.9
26: for M=0 to 9
27: wrt J+.1,A[M,2]
28: next M
29: fmt 9,/;wrt J+.9
30: fmt 9,"  No.10",8x,"No.11",8x,"No.12",8x,"No.13",8x,"No.14",z;wrt J+.9
31: fmt 9,8x,"No.15",8x,"No.16",8x,"No.17";wrt J+.9
32: fmt 9,"  BULK WT TEMP AC FREQUENCY AC VOLTAGE   MANUAL FLAG ",z;wrt J+.9
33: fmt 9," ZERO REF.     SPARE A       SPARE B       VOLT.REF.B";wrt J+.9
34: for M=10 to 17
35: wrt J+.1,A[M,2]
36: next M
37: fmt 9,/;wrt J+.9
38: fmt 9,"* DIGITAL CHANNEL RAW DATA (AVERAGE NUMERICAL): ",/;wrt J+.9
39: fmt 9,"  No.1",9x,"No.2",/,"  AIR TEMP.1    AIR TEMP.2";wrt J+.9
40: fmt 9,2x,4f1.0,1x,fz6.0,z;wrt J+.9,K[1,2],K[2,2],K[3,2],K[4,2],K[9,2]
41: fmt 9,2x,4f1.0,1x,fz6.0;wrt J+.9,K[5,2],K[6,2],K[7,2],K[8,2],K[10,2]
42: fmt 9,/,"* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ",z;wrt J+.9
43: fmt 9,"ENGINEERING UNITS: ",/;wrt J+.9
44: fmt 9,"  MANUAL FLAG  ERROR COUNT  DATA BASE     ",z;wrt J+.9
45: fmt 9,"VOLT.REF.DEV VOLT.REF.DEV ZERO ",z;wrt J+.9
46: fmt 9,"REF.DEV AC VOLT.FLUX AC FREQ.FLUX",1x,"AC VOLTAGE   AC FREQUENCY"
47: wrt J+.9
48: fmt 9,"  (No.scans)    (No.scans)    (No.scans)    ",z;wrt J+.9
49: fmt 9,"A(No.>.005V) B(No.>.005V) (No.>",z;wrt J+.9
50: fmt 9,".002V)  (No.>5V)      (No.>1Hz)",4x,"(VAC)",8x,"(Hz)";wrt J+.9
51: fmt 9,f5.0,7f13.0,f15.1,f14.2
52: wrt J+.9,D[13],E[9]-D[27],D[27],D[0],D[17],D[14],E[8],E[6],D[12],D[11]
53: fmt 9,/,"* OBSERVED MICROMETEOROLOGICAL PARAMETERS TRANSLATED",z;wrt J+.9
54: fmt 9," INTO ENGINEERING UNITS: ",/;wrt J+.9
55: fmt 9,"  AIR TEMP.1    WIND SPEED1  DEW POINT1    TEMP.STRUC.1",z;wrt J+.9
56: fmt 9,14x,"WIND DIR.     BAR.PRES.     SKY RAD.      BULK WT T",z;wrt J+.9
57: fmt 9,"EMP MEAN AIR TMP";wrt J+.9
58: fmt 9,"  (Celsius)    (Meter/sec)  (Celsius)    (Kel.xM-2/3) ",z;wrt J+.9
59: fmt 9,13x,"(Deg.True)   (Millibar)   (Watt/m2)    (Celsius)",z;wrt J+.9
```

```
60:  fmt 9," (Kelvin) ";wrt J+.9
61:  if A[1,2]>=-1 and A[1,2]<=1;gto +5
62:  fmt 9,2x,f7.3,f11.2,f14.2,5x,e10.2,13x,f10.1,f14.1,e15.2,f11.3,7x,f7.3,/
63:  wrt J+.9,D[18],D[5],D[3],D[1],D[9],D[7],D[8],D[10],r14
64:  "LO":2)V;O)D[0])E[6])E[8])D[13])D[14])D[17]
65:  ret
66:  fmt 9,2x,f7.3,f11.2,f14.2,8x,c7,13x,f10.1,f14.1,e15.2,f11.3,7x,f7.3,/
67:  wrt J+.9,D[18],D[5],D[3],"NO DATA",D[9],D[7],D[8],D[10],r14
68:  gto "LO"
*17874
```

```
0: "PRINT2":
1: fmt 9,"  AIR TEMP. 2   WIND SPEED2  DEW POINT2   TEMP. STRUC. 2",z;wrt J+.9
2: fmt 9,14x,"TIDE TABLE";wrt J+.9
3: fmt 9,"  (Celsius)    (Meter/sec)  (Celsius)    (Kel. xM-2/3) ",z;wrt J+.9
4: fmt 9,13x,"(Meter MSL)";wrt J+.9
5: if A[2,2]<-1 or A[2,2]>1;gto +4
6: fmt 9,f9.3,f11.2,f14.2,7x," NO DATA  ",15x,f6.2,/
7: wrt J+.9,D[19],D[6],D[4],r68
8: gto +3
9: fmt 9,f9.3,f11.2,f14.2,5x,e10.2,18x,f6.2,/
10: wrt J+.9,D[19],D[6],D[4],D[2],r68
11: fmt 9,"* CALCULATED MICROMETEOROLOGICAL PARAMETERS:",/;wrt J+.9
12: fmt 9,"  HEIGHT, Z1    POT. TEMP. 1    VIR. TEMP. 1    V. POT. TEMP. 1 ",z;wrt J+.9
13: fmt 9,"ABS. HUMID. 1  REL. HUMID. 1  SPEC. HUMID. 1 ",z;wrt J+.9
14: fmt 9,"VAP. PRES. 1   S. VAP. PRES. 1 REF. INDEX 1";wrt J+.9
15: fmt 9,"  (Meters)      (Celsius)     (Celsius)     (Celsius)     ",z;wrt J+.9
16: fmt 9,"(Kg/m3)       (Percent)     (Kg/Kg)       ",z;wrt J+.9
17: fmt 9,"(Millibar)    (Millibar)    (Kel. xM-2/3)";wrt J+.9
18: if A[1,2]<-1 or A[1,2]>1;gto +4
19: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,"NO DATA",/
20: wrt J+.9,r65,r31,r29,r33,r21,r23,r25,r17,r19
21: gto +3
22: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,e8.2,/
23: wrt J+.9,r65,r31,r29,r33,r21,r23,r25,r17,r19,r27
24: fmt 9,"  HEIGHT, Z2    POT. TEMP. 2    VIR. TEMP. 2    V. POT. TEMP. 2 ",z;wrt J+.9
25: fmt 9,"ABS. HUMID. 2  REL. HUMID. 2  SPEC. HUMID. 2 ",z;wrt J+.9
26: fmt 9,"VAP. PRES. 2   S. VAP. PRES. 2 REF. INDEX 2";wrt J+.9
27: fmt 9,"  (Meters)      (Celsius)     (Celsius)     (Celsius)     ",z;wrt J+.9
28: fmt 9,"(Kg/m3)       (Percent)     (Kg/Kg)       ",z;wrt J+.9
29: fmt 9,"(Millibar)    (Millibar)    (Kel. xM-2/3)";wrt J+.9
30: if A[2,2]<-1 or A[2,2]>1;gto +4
31: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,"NO DATA",/
32: wrt J+.9,r66,r32,r30,r34,r22,r24,r26,r18,r20
33: gto +3
34: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,e8.2,/
35: wrt J+.9,r66,r32,r30,r34,r22,r24,r26,r18,r20,r28
36: fmt 9,3/;wrt J+.9
37: fmt 9,"* CONTINUED ON PAGE 2";wrt J+.9
38: wtb J,12
39: 7.8e9+D[29]*1e6+D[30]*1e4+D[22]*1e2+D[24]}M
40: fmt 9,"  RUN NUMBER:",f11.0,z;wrt J+.9,M
41: fmt 9,56x,"PRINT DATE:  ",c12;wrt J+.9,D$
42: fmt 9,"  PAGE: 2",32x,"E-O MET/OSP",z;wrt J+.9
43: fmt 9,28x,"DATA SAMPLING RATE (ALL CHANNELS): 6/Min";wrt J+.9
44: fmt 9,"  START TIME: ",f2.0,":",f2.0,":",z;wrt J+.9,D[22],D[24]
45: fmt 9,f2.0," PST",15x,"NRL MICROMETEOROLOGY",z;wrt J+.9,D[26]
46: fmt 9,19x,"DATA AVERAGING PERIOD:",f3.0," Min";wrt J+.9,E[9]/6
47: fmt 9,"  START DATE: ",f2.0,1x,c3," 1978",z;wrt J+.9,D[30],0$[D[29]]
48: fmt 9," (DAY",f4.0,")",6x,"SAN NICOLAS ISLAND, CAL",z;wrt J+.9,E[4]
49: fmt 9,16x,"NOMENCLATURE: 1=UPPER LEVEL 2=LOWER LEVEL",/;wrt J+.9
50: fmt 9,"* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED ",z;wrt J+.9
51: fmt 9,"AND CALCULATED VALUES (BUSINGER, 1973):",/;wrt J+.9
52: fmt 9,33x,"FLUX PARAMETERS",62x,"PROFILE SLOPES";wrt J+.9
53: fmt 9,10x,"STABILITY",15x,"(+=UP, -=DOWN)",z;wrt J+.9
54: fmt 9,11x,"SCALING PARAMETERS",7x,"PARTIAL DERIVATIVES",z;wrt J+.9
55: fmt 9,5x,"(+=INCR. WITH HEIGHT)";wrt J+.9
56: fmt 9,4x,"-----------------------     ----------------------",z;wrt J+.9
57: fmt 9,3x,"-----------------------     ----------------------",z;wrt J+.9
58: fmt 9,3x," ---------------------- ",/;wrt J+.9
59: fmt 9,4x,"GRAD. RICHARDSON NUMBER      MOMENTUM FLUX",z;wrt J+.9
```

```
60:  fmt 9,12x,"FRICTION VELOCITY",9x,"GENERAL FORM: DN/DZ=",z;wrt J+.9
61:  fmt 9,6x,"GENERAL FORM: 'N'SLOPE=";wrt J+.9
62:  fmt 9,4x,"(+=Stable,-=Unstable)       (Nt/m2)     ",z;wrt J+.9
63:  fmt 9,14x,"(Meters/sec)",14x,"[(N1-N2)Ln(Z1/Z2)]/",z;wrt J+.9
64:  fmt 9,6x,"[(LnZ1-PSI)-(LnZ2-PSI)]/";wrt J+.9
65:  fmt 9,f10.3,8x,"AT GMH",7x,e9.2,z;wrt J+.9,r40,r55
66:  fmt 9,14x,e12.3,23x,"[(Z1*Z2)1/2]",23x,"[N1-N2]",/;wrt J+.9,r49
67:  fmt 9,4x,"GEOMETRIC MEAN HEIGHT       HUMIDITY FLUX",z;wrt J+.9
68:  fmt 9,12x,"SCALING SPEC. HUMD.          N=WIND SPEED (M/sec) ",z;wrt J+.9
69:  fmt 9,4x,"N=WIND SPEED (M/sec)";wrt J+.9
70:  fmt 9,4x,"(Meter) GMH=(Z1*Z2)1/2",5x,"(Kg/sec m2) ",z;wrt J+.9
71:  fmt 9,13x,"(Kg/Kg)",18x," Z=HEIGHT (Meters) ",z;wrt J+.9
72:  fmt 9,7x,"Z=HEIGHT (M) Vert. Axis";wrt J+.9
73:  fmt 9,f10.2,21x,e9.2,z;wrt J+.9,r64,r56
74:  fmt 9,14x,e12.3,16x,"DWS/DZ=",e10.2,8x,"PSI=PSI1";wrt J+.9,r51,r35
75:  fmt 9,107x,"WS SLOPE=",e10.2;wrt J+.9,r59
76:  fmt 9,4x,"Z/L AT GMH",17x,"SEN. HEAT FLUX";wrt J+.9
77:  fmt 9,f10.3,21x,"(Watts/m2)",15x,"SCALING POT.  TEMP. ",z;wrt J+.9,r41
78:  fmt 9,8x,"N=SPEC. HUMIDITY (Kg/Kg)",2x,"N=SPEC. HUMIDITY (Kg/Kg)";wrt J+.9
79:  fmt 9,31x,e9.2,16x,"(Kelvin)",18x,"Z=HEIGHT (Meters)",z;wrt J+.9,r57
80:  fmt 9,8x,"Z=HEIGHT (M) Vert. Axis";wrt J+.9
81:  fmt 9,4x,"Z/L AT 10 METERS",34x,e12.3,16x,"DSH/DZ=",z;wrt J+.9,r52
82:  fmt 9,e10.2,8x,"PSI=PSI2";wrt J+.9,r36
83:  fmt 9,4x,f6.3,21x,"TOTAL HEAT FLUX",z;wrt J+.9,r70
84:  fmt 9,61x,"SH SLOPE=",e10.2,;wrt J+.9,r60
85:  ret
*31316
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```
0:  "PRINT3":
1:  fmt 9,31x,"(Watts/m2)";wrt J+.9
2:  fmt 9,4x,"Z/L AT Z1",18x,e9.2,z;wrt J+.9,r58
3:  fmt 9,16x,"SCALING V. POT.  TEMP. ",6x,"N=POT. TEMP. ",z;wrt J+.9,r43
4:  fmt 9,"(Kelvin)",6x,"N=POT. TEMP. (Kelvin)",/,4x,f6.3,z;wrt J+.9,r43
5:  fmt 9,46x,"(Kelvin)",18x,"Z=HEIGHT (Meters)",8x,"Z=HEIGHT (M)",z;wrt J+.9
6:  fmt 9," Vert. Axis";wrt J+.9
7:  fmt 9,54x,e12.3,16x,"DPT/DZ=",e10.2,8x,"PSI=PSI2";wrt J+.9,r53,r37
8:  fmt 9,4x,"Z/L AT Z2",94x,"PTK SLOPE=",e10.2,/,4x,f6.3,z;wrt J+.9,r61,r44
9:  fmt 9,24x,"MISCELLANEOUS",/,31x,"--------------------",z;wrt J+.9
10:  fmt 9,6x,"ROUGHNESS LENGTH",10x,"N=V. POT. TEMP. (Kelvin)",z;wrt J+.9
11:  fmt 9,4x,"N=V. POT. TEMP. (Kelvin)",/,4x,"MONIN-OBUKHOV LENGTH",z;wrt J+.9
12:  fmt 9,32x,"(Meters)",18x,"Z=HEIGHT (Meters)",8x,"Z=HEIGHT ",z;wrt J+.9
13:  fmt 9,"(M) Vert. Axis",/,4x,"(Meters)",19x,"AIR DENSITY",z;wrt J+.9
14:  fmt 9,12x,e12.3,16x,"DVPT/DZ=",e10.2,7x,"PSI=PSI2";wrt J+.9,r50,r38
15:  fmt 9,4x,e10.3,17x,"(Kg/m3)",69x,"VPTK SLOPE=",e10.2;wrt J+.9,r42,r62
16:  fmt 9,31x,f6.3,/,4x,"PSI1 AT Z1=",f10.6,31x,"DRAG ",z;wrt J+.9,r54,r45
17:  fmt 9,"COEF.  AT 10 METERS",28x,"N=LnTEMP. STRUC. (KxM-2/3)";wrt J+.9
18:  fmt 9,4x,"PSI1 AT Z2=",f10.6,6x,"AIR SPECIFIC HEAT",z;wrt J+.9,r46
19:  fmt 9,8x,"(Dimensionless)",36x,"Z=HEIGHT (M) Vert. Axis";wrt J+.9
20:  fmt 9,4x,"PSI2 AT Z1=",f10.6,6x,"(ITcal./Kg Kel.)",z;wrt J+.9,r47
21:  fmt 9,9x,e10.3,41x,"PSI=NONE";wrt J+.9,r69
22:  fmt 9,4x,"PSI2 AT Z2=",f10.6,6x,e10.3,z;wrt J+.9,r48,r71
23:  if A[2,1]>=-1 and A[2,1]<=1 or A[2,2]>=-1 and A[2,2]<=1;gto +3
24:  fmt 9,66x,"CT2 SLOPE=",e10.2,/;wrt J+.9,r63
25:  gto +3
26:  fmt 9,66x,"CT2 SLOPE=NO DATA",/;wrt J+.9
27:  fmt 9,31x,"WATER LAT. HEAT VAP. ",/,31x,"(ITcal./Kg)";wrt J+.9
28:  fmt 9,"* GENERAL NOTES: ",13x,e11.3,/;wrt J+.9,r13;0)I;0)F
29:  for X=1 to 7
30:  if F$[X,X]="1";1)I;F+1)F;gsb +2
31:  next X;gto "ENDP3"
32:  fmt 9,4x,"Computational limitations exceeded in equation for ",z;wrt J+.9
33:  jmp 2X
34:  gto "ENDP3"
35:  fmt 9,"Profile Roughness Length. Computation executed by in",z;wrt J+.9
36:  fmt 9,"sertion of a",/,6x,"value= 1.0E-99";wrt J+.9;ret
37:  fmt 9,"Bulk Roughness Length. Computation executed by in",z;wrt J+.9
38:  fmt 9,"sertion of a",/,6x,"value= 1.0E-99";wrt J+.9;ret
39:  fmt 9,"Profile Wind Speed Slope. Computation executed by in",z;wrt J+.9
40:  fmt 9,"sertion of a",/,6x,"denominator= 1.0E-3";wrt J+.9;ret
41:  fmt 9,"Profile Spec. Humidity Slope. Computation executed by ",z;wrt J+.9
42:  fmt 9,"insertion of a",/,6x,"denominator= 1.0E-7";wrt J+.9;ret
43:  fmt 9,"Profile Pot. Temp. Slope. Computation executed by in",z;wrt J+.9
44:  fmt 9,"sertion of a",/,6x,"denominator= 1.0E-4";wrt J+.9;ret
45:  fmt 9,"Profile V. Pot. Temp. Slope. Computation executed by in",z;wrt J+.9
46:  fmt 9,"sertion of a",/,6x,"denominator= 1.0E-4";wrt J+.9;ret
47:  fmt 9,"Profile CT2 Slope. Computation executed by in",z;wrt J+.9
48:  fmt 9,"sertion of a",/,6x,"denominator= ln(1.0E-5)";wrt J+.9;ret
49:  "ENDP3": if I=1;gto +2
50:  fmt 9,4x,"NONE",z;wrt J+.9
51:  for X=1 to 14-2F;fmt 9,/,z;wrt J+.9;next X
52:  fmt 9,2/,"* CONTINUED ON PAGE 3";wrt J+.9;wtb J,12;ret
*22134
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0:  "PRINT4":
1:  7.8e9+D[29]*1e6+D[30]*1e4+D[22]*1e2+D[24]>M
2:  fmt 9,"  RUN NUMBER: ",f11.0;wrt J+.9,M
3:  fmt 9,"  PAGE: 3",32x,"E-O MET/OSP",z;wrt J+.9
4:  fmt 9,28x,"PRINT DATE:  ",c12;wrt J+.9,D$
5:  fmt 9,"  START TIME:  ",f2.0,":",f2.0,":",z;wrt J+.9,D[22],D[24]
6:  fmt 9,f2.0," PST",15x,"NRL MICROMETEOROLOGY",z;wrt J+.9,D[26]
7:  fmt 9,19x,"DATA SAMPLING RATE (ALL CHANNELS):  6/Min";wrt J+.9
8:  fmt 9,"  START DATE:  ",f2.0,1x,c3,1x,"1978",z;wrt J+.9,D[30],Q$[D[29]]
9:  fmt 9," (DAY",f4.0,")",6x,"SAN NICOLAS ISLAND, CAL",z;wrt J+.9,E[4]
10: fmt 9,16x,"DATA AVERAGING PERIOD: ",f3.0," Min",/;wrt J+.9,E[9]/6
11: fmt 9,"* ESTIMATED MICROMETEOROLOGICAL PARAMETERS",z;wrt J+.9
12: fmt 9," AT TEN METERS:",/;wrt J+.9
13: fmt 9,2x,"AIR TEMP.",4x,"WIND SPEED",3x,"DEW POINT",z;wrt J+.9
14: fmt 9,4x,"TEMP. STRUC.",15x,"BULK WT TEMP",1x,"AIR-WT TEMP",z;wrt J+.9
15: fmt 9,2x,"POT-WT TEMP",2x,"VIR-WT TEMP",2x,"V. POT-WT TEMP";wrt J+.9
16: fmt 9,2x,"(Celsius)",4x,"(Meter/sec)",2x,"(Celsius)",z;wrt J+.9
17: fmt 9,4x,"(Kel. xM-2/3)",14x,"(Celsius)",4x,"(Kelvin)",z;wrt J+.9
18: fmt 9,5x,"(Kelvin)",5x,"(Kelvin)",5x,"(Kelvin)";wrt J+.9
19: if A[1,2]>=-1 and A[1,2]<=1 or A[2,2]>=-1 and A[2,2]<=1;gto +5
20: fmt 9,2x,f7.3,4x,f7.2,7x,f7.2,5x,e10.2,17x,f7.3,z
21: wrt J+.9,r13,r14,r15,r16,r9
22: fmt 9,6x,f7.3,6x,f7.3,6x,f7.3,6x,f7.3,/;wrt J+.9,r18,r19,r20,r21
23: gto +4
24: fmt 9,2x,f7.3,4x,f7.2,7x,f7.2,8x,"NO DATA",17x,f7.3,z
25: wrt J+.9,r13,r14,r15,r9
26: fmt 9,6x,f7.3,6x,f7.3,6x,f7.3,6x,f7.3,/;wrt J+.9,r18,r19,r20,r21
27: fmt 9,2x,"HEIGHT",7x,"POT. TEMP.",4x,"VIR. TEMP.",4x,"V. POT.",z;wrt J+.9
28: fmt 9,"TEMP.",2x,"ABS. HUMID.",3x,"REL. HUMID.",3x,"SPEC.",z;wrt J+.9
29: fmt 9,"HUMID.",2x,"VAP. PRES.",4x,"S. VAP. PRES.",2x,"REF. INDEX";wrt J+.9
30: fmt 9,2x,"(Meters)",5x,"(Celsius)",4x,"(Celsius)",z;wrt J+.9
31: fmt 9,4x,"(Celsius)",4x,"(Kg/m3)",6x,"(Percent)",4x,"(Kg/Kg)",z;wrt J+.9
32: fmt 9,6x,"(Millibars)",2x,"(Millibars)",2x,"(Kel. xM-2/3)";wrt J+.9
33: if A[1,2]>=-1 and A[1,2]<=1 or A[2,2]>=-1 and A[2,2]<=1;gto +4
34: fmt 9,1x,f7.2,3f13.3,7x,e9.3,f9.2,9x,e9.3,f9.3,4x,f9.3,7x,e8.2,/
35: wrt J+.9,r22,r23,r24,r25,r26,r27,r28,r29,r30,r31
36: gto +3
37: fmt 9,1x,f7.2,3f13.3,7x,e9.3,f9.2,9x,e9.3,f9.3,4x,f9.3,7x,"NO DATA",/
38: wrt J+.9,r22,r23,r24,r25,r26,r27,r28,r29,r30
39: ret
*9337
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0: "PRINT5":
1: fmt 9,"* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE",z;wrt J+.9
2: fmt 9," ESTIMATED VALUES AT TEN METERS ",z;wrt J+.9
3: fmt 9,"(FRIEHE,1978):",/;wrt J+.9
4: fmt 9,33x,"FLUX PARAMETERS",38x,"MEAN VERTICAL";wrt J+.9
5: fmt 9,10x,"STABILITY",15x,"(+=UP,-=DOWN)",10x,"SCALING",z;wrt J+.9
6: fmt 9,"  PARAMETERS",7x,"VELOCITY COVARIANCE",9x,"MISCELLANEOUS";wrt J+.9
7: fmt 9,4x,"----------",6x,"----------",z;wrt J+.9
8: fmt 9,6x,"----------",5x,"----------",z;wrt J+.9
9: fmt 9,4x,"----------",/;wrt J+.9
10: fmt 9,4x,"GRAD. RICHARDSON NUMBER",5x,"MOMENTUM FLUX",12x,z;wrt J+.9
11: fmt 9,"FRICTION VELOCITY",9x,"WITH LONG.  VELOCITY",6x,z;wrt J+.9
12: fmt 9,"AIR DENSITY";wrt J+.9
13: fmt 9,4x,"(+=Stable,-=Unstable)",6x,"(Nt/m2)",18x,"(Meters/",z;wrt J+.9
14: fmt 9,"sec)",14x,"(Meter2/sec2)",12x,"(Kg/m3)";wrt J+.9
15: fmt 9,1x,f9.3,9x,c6,6x,e9.2,16x,e10.3,16x,e10.3,11x,f10.3,/
16: wrt J+.9,r40,"AT GMH",r55,r49,r35,r54
17: fmt 9,4x,"GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",12x,z;wrt J+.9
18: fmt 9,"SCALING SPEC. HUMID. ",7x,"WITH ABS.  HUMIDITY",7x,z;wrt J+.9
19: fmt 9,"AIR SPECIFIC HEAT";wrt J+.9
20: fmt 9,4x,"(Meter) GMH=(Z1*Z2)1/2",5x,"(Kg/sec m2)",14x,"(Kg/",z;wrt J+.9
21: fmt 9,"Kg)",19x,"(Meter Kg/sec m3)",8x,"(ITcal./Kg Kel.)";wrt J+.9
22: fmt 9,3x,f7.2,21x,e9.2,16x,e10.3,17x,e9.3,16x,e9.3,/
23: wrt J+.9,r64,r56,r51,r36,r71
24: fmt 9,4x,"Z/L AT GMH",17x,"SEN. HEAT FLUX",12x,"SCALING POT. ",z;wrt J+.9
25: fmt 9,"TEMP. ",9x,"WITH POT. TEMPERATURE",5x,"WATER LAT. HEAT VAP. ";wrt J+.9
26: fmt 9,3x,f7.3,21x,"(Watts/m2)",15x,"(Kelvin)",18x,z;wrt J+.9,r41
27: fmt 9,"(Meter Kel./sec)",9x,"(ITcal./Kg)";wrt J+.9
28: fmt 9,31x,e9.2,16x,e10.3,16x,e10.3,15x,e10.3;wrt J+.9,r57,r52,r38,r60
29: fmt 9,4x,"Z/L AT 10 METERS";wrt J+.9
30: fmt 9,3x,f7.3,21x,"TOTAL HEAT FLUX",10x,"SCALING V. POT. ",z;wrt J+.9,r70
31: fmt 9,"TEMP. ",32x,"VAP. PRES. AT WT LEVEL";wrt J+.9
32: fmt 9,31x,"(Watts/m2)",15x,"(Kelvin)",43x,"(Millibar)";wrt J+.9
33: fmt 9,4x,"MONIN-OBUKHOV LENGTH",6x,e10.2,15x,e11.3,40x,f7.3
34: wrt J+.9,r58,r53,r61
35: fmt 9,4x,"(Meters)",/,4x,e10.3,42x,"ROUGHNESS LENGTH",35x,z;wrt J+.9,r42
36: fmt 9,"ABS. HUMID. AT WT LEVEL";wrt J+.9
37: fmt 9,56x,"(Meters)",43x,"(Kg/m3)",/,56x,e10.3,41x,e10.3,/
38: wrt J+.9,r50,r62
39: fmt 9,56x,"DRAG COEF. AT 10 METERS",/,56x,"(Dimensionless)",/,56x,e10.3
40: wrt J+.9,r69
41: for X=1 to 17;fmt 9,/,z;wrt J+.9;next X
42: fmt 9,"* END";wrt J+.9;wtb J,12
43: ret
*23246
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0: "PRINT6":
1: fmt 9,"  AIR TEMP.2   WIND SPEED2  DEW POINT2   TEMP.STRUC.2",z;wrt J+.9
2: fmt 9,14x,"TIDE TABLE";wrt J+.9
3: fmt 9,"  (Celsius)    (Meter/sec)  (Celsius)    (Kel.xM-2/3) ",z;wrt J+.9
4: fmt 9,13x,"(Meter MSL)";wrt J+.9
5: if A[2,2]<-1 or A[2,2]>1;gto +4
6: fmt 9,f9.3,f11.2,f14.2,7x," NO DATA  ",15x,f6.2,/
7: wrt J+.9,D[19],D[6],D[4],r68
8: gto +3
9: fmt 9,f9.3,f11.2,f14.2,5x,e10.2,18x,f6.2,/
10: wrt J+.9,D[19],D[6],D[4],D[2],r68
11: fmt 9,"* CALCULATED MICROMETEOROLOGICAL PARAMETERS:",/;wrt J+.9
12: fmt 9,"  HEIGHT, Z1    POT.TEMP.1    VIR.TEMP.1    V.POT.TEMP.1 ",z;wrt J+.9
13: fmt 9,"ABS.HUMID.1  REL.HUMID.1  SPEC.HUMID.1 ",z;wrt J+.9
14: fmt 9,"VAP.PRES.1   S.VAP.PRES.1 REF.INDEX 1";wrt J+.9
15: fmt 9,"  (Meters)     (Celsius)    (Celsius)    (Celsius)    ",z;wrt J+.9
16: fmt 9,"(Kg/m3)       (Percent)    (Kg/Kg)      ",z;wrt J+.9
17: fmt 9,"(Millibar)    (Millibar)   (Kel.xM-2/3)";wrt J+.9
18: if A[1,2]<-1 or A[1,2]>1;gto +4
19: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,"NO DATA",/
20: wrt J+.9,r65,r31,r29,r33,r21,r23,r25,r17,r19
21: gto +3
22: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,e8.2,/
23: wrt J+.9,r65,r31,r29,r33,r21,r23,r25,r17,r19,r27
24: fmt 9,"  HEIGHT, Z2    POT.TEMP.2    VIR.TEMP.2    V.POT.TEMP.2 ",z;wrt J+.9
25: fmt 9,"ABS.HUMID.2  REL.HUMID.2  SPEC.HUMID.2 ",z;wrt J+.9
26: fmt 9,"VAP.PRES.2   S.VAP.PRES.2 REF.INDEX 2";wrt J+.9
27: fmt 9,"  (Meters)     (Celsius)    (Celsius)    (Celsius)    ",z;wrt J+.9
28: fmt 9,"(Kg/m3)       (Percent)    (Kg/Kg)      ",z;wrt J+.9
29: fmt 9,"(Millibar)    (Millibar)   (Kel.xM-2/3)";wrt J+.9
30: if A[2,2]<-1 or A[2,2]>1;gto +4
31: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,"NO DATA",/
32: wrt J+.9,r66,r32,r30,r34,r22,r24,r26,r18,r20
33: gto +3
34: fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,e8.2,/
35: wrt J+.9,r66,r32,r30,r34,r22,r24,r26,r18,r20,r28
36: fmt 9,3/;wrt J+.9
37: fmt 9,"* CONTINUED ON PAGE 2";wrt J+.9
38: wtb J,12
39: 7.8e9+D[29]*1e6+D[30]*1e4+D[22]*1e2+D[24]}M
40: fmt 9,"  RUN NUMBER:",f11.0,z;wrt J+.9,M
41: fmt 9,56x,"PRINT DATE:  ",c12;wrt J+.9,D$
42: fmt 9,"  PAGE: 2",32x,"E-O MET/OSP",z;wrt J+.9
43: fmt 9,28x,"DATA SAMPLING RATE (ALL CHANNELS): 6/Min";wrt J+.9
44: fmt 9,"  START TIME:  ",f2.0,":",f2.0,":",z;wrt J+.9,D[22],D[24]
45: fmt 9,f2.0," PST",15x,"NRL MICROMETEOROLOGY",z;wrt J+.9,D[26]
46: fmt 9,19x,"DATA AVERAGING PERIOD:",f3.0," Min";wrt J+.9,E[9]/6
47: fmt 9,"  START DATE:  ",f2.0,1x,c3," 1978",z;wrt J+.9,D[30],G$[D[29]]
48: fmt 9," (DAY",f4.0,")",6x,"SAN NICOLAS ISLAND, CAL",z;wrt J+.9,E[4]
49: fmt 9,16x,"NOMENCLATURE; 1=UPPER LEVEL 2=LOWER LEVEL",/;wrt J+.9
50: fmt 9,"* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED ",z;wrt J+.9
51: fmt 9,"AND CALCULATED VALUES (BUSINGER,1973):",/;wrt J+.9
52: fmt 9,33x,"FLUX PARAMETERS",62x,"PROFILE SLOPES";wrt J+.9
53: fmt 9,10x,"STABILITY",15x,"(+=UP,-=DOWN)",z;wrt J+.9
54: fmt 9,11x,"SCALING PARAMETERS",7x,"PARTIAL DERIVATIVES",z;wrt J+.9
55: fmt 9,5x,"(+=INCR.WITH HEIGHT)";wrt J+.9
56: fmt 9,4x,"----------------------     --------------------",z;wrt J+.9
57: fmt 9,5x,"----------------------     --------------------",z;wrt J+.9
58: fmt 9,3x," -------------------- ",/;wrt J+.9
59: fmt 9,4x,"GRAD.RICHARDSON NUMBER      MOMENTUM FLUX",z;wrt J+.9
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60:  fmt 9,12x,"FRICTION VELOCITY",9x,"GENERAL FORM:DN/DZ=",z;wrt J+.9
61:  fmt 9,6x,"GENERAL FORM: 'N'SLOPE=";wrt J+.9
62:  fmt 9,4x,"(+=Stable,-=Unstable)       (Nt/m2)     ",z;wrt J+.9
63:  fmt 9,14x,"(Meters/sec)",14x,"[(N1-N2)Ln(Z1/Z2)]/",z;wrt J+.9
64:  fmt 9,6x,"[(LnZ1-PSI)-(LnZ2-PSI)]/";wrt J+.9
65:  fmt 9,f10.3,8x,"AT GMH",7x,"NOT COMPUTED",z;wrt J+.9,r40
66:  fmt 9,13x,"NOT COMPUTED",21x,"[(Z1*Z2)1/2]",23x,"[N1-N2]",/;wrt J+.9
67:  fmt 9,4x,"GEOMETRIC MEAN HEIGHT       HUMIDITY FLUX",z;wrt J+.9
68:  fmt 9,12x,"SCALING SPEC.HUMD.         N=WIND SPEED (M/sec) ",z;wrt J+.9
69:  fmt 9,4x,"N=WIND SPEED (M/sec)";wrt J+.9
70:  fmt 9,4x,"(Meter) GMH=(Z1*Z2)1/2",5x,"(Kg/sec m2) ",z;wrt J+.9
71:  fmt 9,13x,"(Kg/Kg)",18x," Z=HEIGHT (Meters) ",z;wrt J+.9
72:  fmt 9,7x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
73:  fmt 9,f10.3,21x,"NOT COMPUTED",13x,"NOT COMPUTED",z;wrt J+.9,r64
74:  fmt 9,14x,"DWS/DZ=",e10.2,8x,"PSI=PSI1";wrt J+.9,r35
75:  fmt 9,107x,"WS SLOPE=","NOT COMPUTED";wrt J+.9
76:  fmt 9,4x,"Z/L AT GMH",17x,"SEN.HEAT FLUX";wrt J+.9
77:  fmt 9,4x,"NOT COMPUTED",15x,"(Watts/m2)",15x,"SCALING POT.",z;wrt J+.9
78:  fmt 9,"TEMP.",9x,"N=SPEC.HUMIDITY (Kg/Kg)",z;wrt J+.9
79:  fmt 9,2x,"N=SPEC.HUMIDITY (Kg/Kg)";wrt J+.9
80:  fmt 9,31x,"NOT COMPUTED",13x,"(Kelvin)",18x,"Z=HEIGHT",z;wrt J+.9
81:  fmt 9," (Meters)",8x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
82:  fmt 9,4x,"Z/L AT 10 METERS",36x,"NOT COMPUTED",14x,"DSH/DZ=",z;wrt J+.9
83:  fmt 9,e10.2,8x,"PSI=PSI2";wrt J+.9,r36
84:  fmt 9,4x,"NOT COMPUTED",15x,"TOTAL HEAT FLUX",z;wrt J+.9
85:  fmt 9,61x,"SH SLOPE= NOT COMPUTED";wrt J+.9
86:  ret
*29834
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0: "PRINT7":
1: fmt 9,31x,"(Watts/m2)";wrt J+.9
2: fmt 9,4x,"Z/L AT Z1",18x,"NOT COMPUTED",z;wrt J+.9
3: fmt 9,13x,"SCALING V.POT. TEMP.",6x,"N=POT.TEMP.(Kelvin)",z;wrt J+.9
4: fmt 9,6x,"N=POT.TEMP.(Kelvin)";wrt J+.9
5: fmt 9,4x,"NOT COMUTED",41x,"(Kelvin)",18x,"Z=HEIGHT",z;wrt J+.9
6: fmt 9," (Meters)",8x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
7: fmt 9,56x,"NOT COMPUTED",14x,"DPT/DZ=",e10.2,8x,"PSI=PSI2";wrt J+.9,r37
8: fmt 9,4x,"Z/L AT Z2",94x,"PTK SLOPE=NOT COMPUTED";wrt J+.9
9: fmt 9,4x,"NOT COMPUTED",18x,"MISCELLANEOUS",/,31x,"----------",z;wrt J+.9
10: fmt 9,"---------",6x,"ROUGHNESS LENGH",11x,"N=V.POT.TEMP.",z;wrt J+.9
11: fmt 9,"(Kelvin)",4x,"N=V.POT.TEMP.(Kelvin)";wrt J+.9
12: fmt 9,4x,"MONIN-OBUKHOV LENGTH",32x,"(Meters)",18x,"Z=HEIGHT ",z;wrt J+.9
13: fmt 9,"(Meters)",8x,"Z=HEIGHT (M) Vert.Axis",/,4x,"(Meters)",z;wrt J+.9
14: fmt 9,19x,"AIR DENSITY",14x,"NOT COMPUTED",14x,"DVPT/DZ=",z;wrt J+.9
15: fmt 9,e10.2,7x,"PSI=PSI2";wrt J+.9,r38
16: fmt 9,4x,"NOT COMPUTED",15x,"(Kg/m3)",69x,"VPTK SLOPE=NOT ",z;wrt J+.9
17: fmt 9,"COMPUTED",/,31x,f6.3,/,4x,"PSI1 AT Z1=NOT COMPUTED",z;wrt J+.9,r54
18: fmt 9,29x,"DRAG COEF. AT 10 METERS",28x,"N=LnTEMP.STRUC.",z;wrt J+.9
19: fmt 9,"(KxM-2/3)",/,4x,"PSI1 AT Z2=NOT COMPUTED",4x,"AIR ",z;wrt J+.9
20: fmt 9,"SPECIFIC HEAT",8x,"(Dimensionless)",36x,"Z=HEIGHT (M)",z;wrt J+.9
21: fmt 9," Vert.Axis",/,4x,"PSI2 AT Z1=NOT COMPUTED",z;wrt J+.9
22: fmt 9,4x,"(ITcal./Kg Kel.)",9x,"NOT COMPUTED",39x,"PSI=NONE";wrt J+.9
23: fmt 9,4x,"PSI2 AT Z2=NOT COMPUTED",4x,e10.3,z;wrt J+.9,r71
24: if A[2,1]>=-1 and A[2,1]<=1 or A[2,2]>=-1 and A[2,2]<=1;gto +3
25: fmt 9,66x,"CT2 SLOPE=",e10.2,/;wrt J+.9,r63
26: gto +3
27: fmt 9,66x,"CT2 SLOPE=NO DATA",/;wrt J+.9
28: fmt 9,31x,"WATER LAT.HEAT VAP.",/,31x,"(ITcal./Kg)";wrt J+.9
29: fmt 9,"* GENERAL NOTES:",13x,e11.3,/;wrt J+.9,r13;0}I;0}F
30: if r40<=.2;gto +6
31: fmt 9,4x,"Profile data Richardson Number (RI) >+0.2; functio",z;wrt J+.9
32: fmt 9,"nal limitations exceeded for computing Z/L as a funct",z;wrt J+.9
33: fmt 9,"ion of RI.",/,6x,"Profile Z/L and Z/L dependent ",z;wrt J+.9
34: fmt 9,"calculations not executed.";wrt J+.9,1}I
35: if r40>=-2;gto +5
36: fmt 9,4x,"Profile data Richardson Number (RI) <-2.0; function",z;wrt J+.9
37: fmt 9,"al limitation exceeded for computing Z/L as a function",z;wrt J+.9
38: fmt 9," of RI.",/,6x,"Profile Z/L and Z/L dependent",z;wrt J+.9
39: fmt 9," calculations not executed.";wrt J+.9;1}I
40: for X=1 to 7
41: if F$[X,X]="1";1}I;F+1}F;gsb +2
42: next X;gto "ENDP7"
43: fmt 9,4x,"Computational limitations exceeded in equation for ",z;wrt J+.9
44: jmp 2%
45: gto "ENDP7"
46: fmt 9,"Profile Roughness Length. Computation executed by in",z;wrt J+.9
47: fmt 9,"sertion of a",/,6x,"value= 1.0E-99";wrt J+.9;ret
48: fmt 9,"Bulk Roughness Length. Computation executed by in",z;wrt J+.9
49: fmt 9,"sertion of a",/,6x,"value= 1.0E-99";wrt J+.9;ret
50: fmt 9,"Profile Wind Speed Slope. Computation executed by in",z;wrt J+.9
51: fmt 9,"sertion of a",/,6x,"denominator= 1.0E-3";wrt J+.9;ret
52: fmt 9,"Profile Spec.Humidity Slope. Computation executed by ",z;wrt J+.9
53: fmt 9,"insertion of a",/,6x,"denominator= 1.0E-7";wrt J+.9;ret
54: fmt 9,"Profile Pot.Temp.Slope. Computation executed by in",z;wrt J+.9
55: fmt 9,"sertion of a",/,6x,"denominator= 1.0E-4";wrt J+.9;ret
56: fmt 9,"Profile V.Pot.Temp.Slope. Computation executed by in",z;wrt J+.9
57: fmt 9,"sertion of a",/,6x,"denominator= 1.0E-4";wrt J+.9;ret
58: fmt 9,"Profile CT2 Slope. Computation executed by in",z;wrt J+.9
59: fmt 9,"sertion of a",/,6x,"denominator= ln(1.0E-5)";wrt J+.9;ret
```

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60:  "ENDP7": if I=1; gto +2
61:  fmt 9, 4x, "NONE", z; wrt J+.9
62:  for X=1 to 14-2F; fmt 9, /, z; wrt J+.9; next X
63:  fmt 9, /, "* CONTINUED ON PAGE 3"; wrt J+.9; wtb J, 12; ret
*6417
```

```
0: "KPRINT":
1: J>I
2: fmt 9,"  PAGE 1";wrt I+.9
3: fmt 9,"  DATA AVERAGING PERIOD:",f2.0,":",f2.0,":",f2.0," to",z
4: wrt I+.9,D[22],D[24],D[26]
5: fmt 9,f3.0,":",f2.0,":",f2.0,9x,"PARTICULATE AEROSOL DATA"
6: wrt I+.9,D[21],D[23],D[25]
7: fmt 9,"  DATE:  ",f2.0,1x,c3," (DAY ",f3.0,z
8: wrt I+.9,D[30],G$[D[29]],D[28]
9: fmt 9,") 1978",21x,"NRL ATMOSPHERIC PHYSICS BRANCH";wrt I+.9
10: fmt 9,53x,"SAN NICOLAS ISLAND, CA.";wrt I+.9
11: fmt 9,"  P R L T V   VISIBILITY(m):     ",f4.0,z;wrt I+.9,D[15]
12: fmt 9,74x,"AIR TEMP(deg C)  ",f7.3;wrt I+.9,D[18]
13: fmt 9,"  R A E O O   WIND SPEED(m/sec):",f6.2,z;wrt I+.9,r5
14: fmt 9,72x,"DEW POINT(deg C) ",f5.2;wrt I+.9,D[3]
15: fmt 9,"  O N V T L   WIND DIR.(deg.):   ",f7.3,13x,"PARTI",z;wrt I+.9,D[9]
16: fmt 9,"CLE NUMBER DENSITY (No./cc per micron)",z;wrt I+.9
17: fmt 9,15x,"REL. HUMIDITY(%) ",f5.0;wrt I+.9,r23
18: fmt 9,"  B Q E L .";wrt I+.9
19: fmt 9,"  E E L .    CHAN.01 CHAN.02 CHAN.03 CHAN.04 CHAN.05",z;wrt I+.9
20: fmt 9," CHAN.06 CHAN.07 CHAN.08 CHAN.09 CHAN.10",z;wrt I+.9
21: fmt 9," CHAN.11 CHAN.12 CHAN.13 CHAN.14 CHAN.15",/;wrt I+.9
22: "CHANGE NEXT LINE TO PRINT OUT ALL 9 RANGES.  CHANGE 5 to 1":
23: for P=5 to 9
24: 0>M;for J=1 to 15;C[P,J]+M>M;next J
25: if M=0;gto "KN"
26: if P<9;fmt 1x,c,2f2.0,f4.1,1x,z;wrt I," A",(P-1)mod4+1,P>4,W[P,2]
27: if P=9;fmt 1x,c,2f2.0,f4.1,1x,z;wrt I," 0",(P-1)mod4+1,P>4,W[9,2]
28: for J=1 to 15
29: fmt e8.1,z;wrt I,C[P,J];0>C[P,J]
30: next J
31: wrt I
32: "KN":next P
33: I>J;wtb J,12
34: ret
*29249
```


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